



# HVAC INDOOR MAKE-UP AIR HANDLERS



**PACKAGED INDOOR ARRANGEMENTS  
FOR MAKE-UP AIR, HEATING  
AND COOLING**

# General Information

## Sterling Quality

Sterling HVAC Equipment, a division of Mestek, has been a leading producer of quality engineered and manufactured HVAC equipment for over 40 years. This experience has allowed us to design and manufacture a complete line of Indoor Gas-Fired Make-Up Air equipment suitable for commercial, institutional and industrial applications. Our wide range of modular mechanical and electrical components allow custom unit selection in a standard package, providing outstanding versatility, performance and reliability you've come to expect from Sterling. Our expert engineering staff is always available to provide professional assistance in any phase of your project from preliminary planning to installation and operation.

Sterling Indoor Make-Up Air Units, similar to the new Outdoor Engineered Product Line, have incorporated a multi-digit "Model Number" in order to more comprehensively describe the product. With this "Model Number" system, we can now offer the vast array of features found in this catalog to meet your ever demanding applications as "Standard Equipment for Sterling".

## Product Description

### Sterling Indoor Make-Up Air Units

The Sterling Indoor Make-Up Air Unit is a packaged air, heating and cooling system, suitable for heating, cooling, ventilating and makeup air applications. Unit sizes range from 922 to 9,831 CFM (0.4-4.6 cu. m/s) with 1/2-15 HP. motors and 100,000 BTU/H to 1,200,000 BTU/H (29.3 to 351.4 kW) input. Duct furnaces are CSA International certified for safety and performance, with a range of 100,000 to 400,000 BTU/H (29.3 to 117.1 kW) input per duct furnace. Packaged units are also designed to be in compliance with "UL-1995" Standard for HVAC Equipment. Sterling Indoor units may be ordered with DX or Chilled Water Cooling, Evaporative Cooling or Packaged Heating and Cooling Systems.

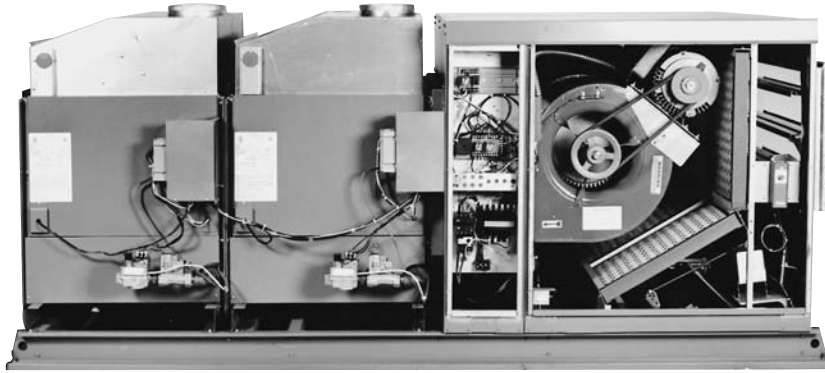
The mechanical configuration is determined by customer selection and may consist of one of 5 standard arrangements (see "Indoor Arrangements" [IA], model number digit 7). Indoor Arrangements are divided into two classifications "Standard" and "High

CFM" Blower types. The "Standard" Blower units consist of a blower cabinet that houses dampers, filters and blower(s) in one cabinet, an optional Evaporative cooling unit and up to 2 Indoor Duct Furnaces (800 MBH Max.) (234.3 kW Max.) may also be included. The "High CFM" blower units utilize a separate Damper/Filter cabinet with a "V" bank filter arrangement, a Blower cabinet and up to 3 Duct Furnaces (1200 MBH Max.) (351.4 kW Max.). An optional cooling coil cabinet is offered with up to 2 furnaces (800 MBH Max.). All arrangements are rail mounted.

Furnace types are also divided into three classifications- Natural or Power vented and Separated Combustion models, with Left or Right Hand access (see "Unit Type" [UT], "Furnace Type" [FT] model number digits 1,2 and 5). All furnace types offer an 80% efficiency rating with a  $\Delta T$  of 30-80 F° (17-44 C°).

In addition to a versatile array of mechanical features, Sterling Indoor Make-Up Air Units also offer a wide variety of factory installed control options. Control components are located in the main electrical cabinet. The main electrical cabinet is located out of the air stream as part of the blower transition, between the blower cabinet and the first furnace for both Standard and High CFM units. The standard electrical control scheme consists of a solid state fan time delay; two pre-wired relay sockets for fan on and damper open functions mounted on the unit's main connection board; a solid state gas ignition system; and room or duct thermostats. The units are also equipped with a blower door safety interlock, a 24 VAC circuit breaker, a high temperature limit switch in each furnace section, and a reverse air flow switch located in the blower cabinet as standard equipment.

Gas control options range from single stage to six stages of fire, Electronic Modulation and DDC (Direct Digital Control) ready packages (see "Gas Control" [GC] model number digit 10). Air control options offer a similar range of control features from manual dampers to modulating motorized dampers that may include mixed air, dry bulb, pressure sensing, enthalpy control, DDC interface or ASHRAE Cycle control arrangements (see "Air Control" [AC] model number digit 15).



## Features and Benefits

- CSA International Certified Indoor Duct Furnaces.
- Packaged Units, designed to UL-1995 Standards.
- FM (Factory Mutual) Compliant.
- Heating Capacities from 100 MBH - 1,200 MBH. (29.3 kW - 351.4 kW)
- Natural or Power Vented and Separated Combustion Furnaces.
- 80% Efficient Furnace.
- Furnace Temperature Rise 30-80 F° (17-44 C°) per Furnace.
- CFM Ranges from 922 - 9,831 CFM (0.4 — 4.6 Cu. m/s).
- Motor Sizes up to 15 Horse Power (EPACT compliant).
- Standard ODP Motors; with Premium Efficiency, Totally Enclosed and 2 Speed optional.
- Standard Right Side Service Access, Left Optional.
- Draw-thru Heating or Cooling Coil Cabinet with Stainless Steel Drip Pan.
- Evaporative Cooling with standard 8 or optional 12 in. media (203 or 305 mm).
- Standard 18 ga. Cabinets, Painted Sterling Gray.
- Standard 20 ga. Aluminized Steel Heat Exchanger.
- Standard 1" in. Washable Filters.
- Standard Single Stage Combination Gas Valve.
- Standard High Temperature Limit (each Furnace).
- Standard Blower Door Safety Interlock Switch.
- Standard Reverse Air Flow Safety Switch.
- Standard 24 Volt Circuit Breaker.
- Standard Printed Circuit Main Connection Board.
- Wiring Harnesses with Stamped Wire Numbers.
- Solid State Automatic Pilot Ignition Control.
- Solid State Fan Time Delay.
- Over 40 Standard Control Packages.

## Sterling Specifier

The STERLING SPECIFIER is a Microsoft Windows® based computer program developed to assist the HVAC industry in design and application of Sterling rooftop and indoor make-up air equipment.

This automated selection program is capable of selecting a unit by direct model number input or design data (ie: Required output, Air Flow or Temperature Rise.)

The STERLING SPECIFIER is designed to produce and print model number specific certification and specification sheets that include customer information, submittal sheet attachment listing and model number description. These files are in standard text format for use with any word processing program.

To receive your copy of the STERLING SPECIFIER, contact your nearest Sterling Representative or contact our Customer Service Department at 413-564-5540, FAX: 413-562-5311, or [www.hvacware.com](http://www.hvacware.com)

# Indoor Make-Up Air Model Number Description

<b>Digit</b>	<b>M</b>	<b>X</b>	<b>X</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>+</b>
<b>Item</b>	<b>Prefix</b>			<b>UT</b>	<b>CA</b>	<b>FT</b>	<b>FM</b>	<b>IA</b>	<b>CO</b>	<b>GT</b>	<b>GC</b>	<b>SV</b>	<b>MT</b>	<b>MS</b>	<b>AI</b>	<b>AC</b>	<b>AS</b>			

(Internal use Only)

## 1, 2 - Unit Type [UT]

MU - Natural Vent Indoor Make-up Air Unit  
 ME - Power Vented Indoor Make-up Air Unit  
 MS - Separated Combustion Indoor Make-up Air Unit

## 3, 4 - Capacity [CA]

<b>Single Furnace</b>	<b>Double Furnace</b>
10 - 100,000 BTU/HR	50 - 500,000 BTU/HR
15 - 150,000 BTU/HR	60 - 600,000 BTU/HR
20 - 200,000 BTU/HR	70 - 700,000 BTU/HR
25 - 250,000 BTU/HR	80 - 800,000 BTU/HR
30 - 300,000 BTU/HR	
35 - 350,000 BTU/HR	<b>Triple Furnace</b>
40 - 400,000 BTU/HR	12 - 1,200,000 BTU/HR

## 5 - Furnace Type [FT]

A - Standard Temperature Rise (30-80 F°), Right Side Access  
 B - Standard Temperature Rise (30-80 F°), Left Side Access  
 O - None  
 Z - Other

## 6 - Furnace Construction Material [FM]

- 1 - Aluminized Steel
- 2 - 409 Stainless Steel (First Furnace Only)
- 3 - 409 Stainless Steel (All Furnace Sections)
- 4 - 321 Stainless Steel (First Furnace Only)
- 5 - 321 Stainless Steel (All Furnace Sections)
- 6 - 409 Stainless Steel Package (First Furnace Only)
- 7 - 409 Stainless Steel Package (All Furnace Sections)
- 8 - 321 Stainless Steel Package (First Furnace Only)
- 9 - 321 Stainless Steel Package (All Furnace Sections)
- Z - Other

## 7 - Indoor Arrangement (includes furnace section(s) [IA])

A - Duct (50/12 [CA] Only)  
 B - Blower (Standard)  
 D - Blower (Standard) / Evap. Cooling  
 G - Blower (High CFM)  
 K - Blower (High CFM) / Coil Cabinet  
 O - None  
 Z - Other

## 8 - Coil Options [CO]

A - DX Coil, 4 Row Single Circuit  
 B - DX Coil, 4 Row Dual Circuit  
 C - DX Coil, 6 Row Single Circuit  
 D - DX Coil, 6 Row Dual Circuit  
 E - Chilled Water Coil, 4 Row  
 G - Chilled Water Coil, 6 Row  
 O - None  
 Z - Other

## 9 - Gas Type [GT]

1 - Natural Gas  
 2 - Propane Gas (LP)  
 3 - Natural Gas w/100% Shutoff  
 O - None

## 10 - Gas Control [GC]

A - Single Stage Gas (Standard)  
 B - Two Stage Gas  
 H - Electronic Modulation w/Room Sensing  
 J - Electronic Modulation w/Duct Sensing  
 K - Electronic Modulation w/Duct Sensing & Ovrd. Stat  
 L - Electronic Modulation w/External 4-20 mA Input (Furnace One)  
 M - Electronic Modulation w/External 4-20 mA Input (All Furnaces)  
 N - Electronic Modulation w/External 0-10 VDC Input (Furnace One)  
 P - Electronic Modulation w/External 0-10 VDC Input (All Furnaces)  
 R - Two Stage Remote Temperature Control w/Duct Sensor  
 S - Three Stage Remote Temperature Control w/Duct Sensor  
 T - Four Stage Remote Temperature Control w/Duct Sensor  
 U - S-350 2 Stage Modular Electronic Control System  
 W - S-350 3 Stage Modular Electronic Control System  
 X - S-350 4 Stage Modular Electronic Control System  
 Y - S-350 6 Stage Modular Electronic Control System  
 O - None  
 Z - Other

## 11 - Supply Voltage [SV]

1 - 115/1/60  
 2 - 208/1/60  
 3 - 230/1/60  
 4 - 208/3/60  
 5 - 230/3/60  
 6 - 460/3/60  
 7 - 575/3/60  
 O - None  
 Z - Other

## 12 - Motor Type [MT]

1 - Open Drip Proof (Standard)  
 2 - Totally Enclosed  
 3 - Premium Efficiency, Open Drip Proof  
 4 - Premium Efficiency, Totally Enclosed  
 5 - Two Speed One Winding, Open Drip Proof  
 6 - Two Speed Two Winding, Open Drip Proof  
 O - None  
 Z - Other

## 13 - Motor Sizes [MS]

A - 1/2 HP. w/Contactor  
 B - 3/4 HP. w/Contactor  
 C - 1 HP. w/Contactor  
 D - 1-1/2 HP. w/Contactor  
 E - 2 HP. w/Contactor  
 G - 3 HP. w/Contactor  
 H - 5 HP. w/Contactor  
 J - 1/2 HP. w/Magnetic Starter  
 K - 3/4 HP. w/Magnetic Starter  
 L - 1 HP. w/Magnetic Starter  
 M - 1-1/2 HP. w/Magnetic Starter  
 N - 2 HP. w/Magnetic Starter  
 P - 3 HP. w/Magnetic Starter  
 R - 5 HP. w/Magnetic Starter  
 S - 7-1/2 HP. w/Magnetic Starter  
 T - 10 HP. w/Magnetic Starter  
 U - 15 HP. w/Magnetic Starter  
 O - None  
 Z - Other

## 14 - Air Inlet Configuration [AI]

1 - Outside Air (OA) (Horiz. Inlet)  
 2 - Outside Air w/Air Hood (Horiz. Inlet)\*  
 3 - Bottom Return Air (RA)  
 \*Air Hood shipped separately  
 4 - Outside Air and Return Air (OA/RA)  
 5 - Outside and Return Air w/Air Hood\*  
 O - None  
 Z - Other

## 15 - Air Control & Damper Arrangement [AC]

A - Outside Air 2 Pos. Motor / Spring Return  
 B - Return Air 2 Pos. Motor / Spring Return  
 C - OA/RA 2 Pos. / Spring Return  
 D - OA/RA Mod. Mtr. w/Mixed Air Control / Min. Pot.  
 E - OA/RA Mod. Mtr. w/Mixed Air Control / Min. Pot. / SR  
 G - OA/RA Mod. Mtr. w/Mixed Air Control  
 H - OA/RA Mod. Mtr. w/Mixed Air Control / SR  
 J - OA/RA Mod. Mtr. w/Min. Pot.  
 K - OA/RA Mod. Mtr. w/Min. Pot. / SR  
 L - OA/RA Mod. Mtr. w/Dry Bulb / Mixed Air Control / Min. Pot.  
 M - OA/RA Mod. Mtr. w/Dry Bulb / Mixed Air Control / Min. Pot. /SR  
 N - OA/RA Mod. Mtr. w/Enthalpy Controlled Economizer / SR  
 P - OA/RA Mod. Mtr. w/Pressure Control (Space Pressure)  
 Q - OA/RA Mod. Mtr. w/ Carbon Dioxide (CO<sub>2</sub>) Monitor / SR  
 R - OA/RA Mod. Mtr. w/S-350-P Proportional Mixed Air Control / SR  
 S - OA/RA Mod. Mtr. w/0-10 VDC & 4-20 mA Analog Input (External Input)  
 T - OA/RA Mod. Mtr. w/0-10 VDC & 4-20 mA Analog Input / SR (External Input)  
 U - ASHRAE Cycle I (OA/RA 2 Pos. Mtr. w/Warm-up Stat / SR)  
 W - ASHRAE Cycle II (OA/RA Mod. Mtr. w/Warm-up Stat / Mixed Air / Min. Pot. / SR)  
 X - ASHRAE Cycle III (OA/RA Mod. Mtr. w/Warm-up Stat / Mixed Air / SR)  
 Y - Manual Dampers  
 O - None

MOD = Modulating Damper Motor  
 OA = Outside Air RA = Return Air SR = Spring Return

## 16 - Accessories [AS]

**Factory Installed**  
 A1 - Moisture Eliminators  
 A2 - Horizontal Return  
 A3 - Low Leak Damper  
 A5 - Furnace Drip Pan, 409 Stainless Steel (MU and ME only)  
 A6 - High Altitude Unit  
 A8 - Input De-rate  
 B1 - Filters - 1" WA (Standard)  
 B2 - Filters - 2" WA  
 B3 - Filters - 2" TA  
 B4 - Filters - 1" 30%  
 B5 - Filters - 2" 30%  
 C2 - Evap. Cooler - 12" CELdek® Media  
 C3 - Evap. Cooler - Freezestat  
 C4 - Evap. Cooler - 8" GLASdek® Media  
 C5 - Evap. Cooler - 12" GLASdek® Media  
 E1 - Clogged Filter Switch  
 E4 - Manual Blower Switch  
 G1 - Thermostat - T87F w/Subbase  
 G2 - Thermostat - T87F w/Subbase & Guard  
 G3 - Thermostat - T834H w/Subbase (Sterling Stat)  
 G4 - Thermostat - T7300 - 7 Day Programmable  
 G5 - Thermostat - T874 (Two Stage)  
 G6 - Locking Thermostat Cover  
 H1 - Return Firestat  
 H3 - Time Delay Freezestat  
 H4 - Ambient Lockout  
 J1 - Interlock Relay - 24V Coil DPDT 10A, Plug-in  
 J2 - Interlock Relay - 24/115V Coil SPDT 10A  
 J3 - Interlock Relay - 24/115/230V Coil DPDT 10A  
 J4 - Interlock Relay - 24V Coil 4PDT 10A  
 K2 - High / Low Gas Pressure Limit Switches  
 K3 - Status Lamp (Elec. Cabinet)  
 K4 - Fan Time Delay (Arrangement A Only)  
 K5 - Air Flow Prove Switch (Dwyer 1910-0)  
 N1 - Hinged Access Door(s)  
 N5 - Service Convenience Package  
 N6 - Double Wall Construction  
 Z1 - Other (Specify)

**Field Installed**  
 A7 - High Pressure Regulator  
 C1 - Evap. Cooler - Fill & Drain Kit  
 D1 - Time Clock - 7 Day  
 D2 - Time Clock - 24 Hour  
 E2 - G.F.I. Convenience Outlet 115VAC  
 E3 - Remote Control Panel  
 F1 - Ductstat - One Stage  
 F2 - Ductstat - Two Stage  
 H2 - Supply Firestat  
 K1 - Manual Reset High Limit Switch  
 L1 - 30 Amp, Fused Disconnect Switch  
 L2 - 30 Amp, Non Fused Disconnect Switch  
 L3 - 60 Amp, Fused Disconnect Switch  
 L4 - 60 Amp, Non Fused Disconnect Switch  
 M1 - Draftor (MU only)  
 M2 - Vent Cap(s)  
 M3 - Flue Adapter(s) (4-5 in.)  
 M4 - Vertical Concentric Vent Kit (MS units only)  
 M5 - Horizontal Concentric Vent Kit (MS units only)

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# Indoor Duct Furnaces

## Natural Vent [QVS], Power Vent [QVES] and Separated Combustion [QVSD]



**Unit Type [UT] Model Digits 1,2**  
**Capacity [CA] Model Digits 3,4**  
**Furnace Type [FT] Model Digit 5**  
**Furnace Material [FM] Model Digit 6**  
**Indoor Arrangement [IA] Model Digit 7**

Sterling Indoor Duct Furnaces are CSA International certified and FM (Factory Mutual) compliant. Duct Furnaces are available as Natural or Power Vented and Separated Combustion Units. Sizes range from 100 MBH to 400 MBH (29.3 kW to 117.1 kW) per furnace with double and triple in series configurations available, for a capacity range of 100 MBH (29.3 to 351.4 kW) to 1,200 MBH. All Sterling Indoor Duct Furnaces are designed with ease of service in mind and feature right or left side access, slide-out burner drawer, terminal block connection, solid state automatic pilot ignition, combination gas valve and automatic reset safety limits. Duct furnaces may be ordered to operate with Natural or Propane (LP) gas (Gas Type [GT] Model digit 9) and are standard for altitudes at 0 to 2,000 feet (610m) (Units are also available for higher elevations; specify when ordering if unit is above 2,000 feet (610m)).

Sterling Indoor Duct Furnaces have an 80% efficiency rating with  $\Delta T$  of 30-80 F° (17-44 C°) per furnace. The maximum discharge air temperature for all duct furnaces is 150°F (66°C).

All Sterling Indoor Duct Furnaces are constructed with aluminized steel heat exchangers, draft diverters or flue collectors, and burners, with optional 409 or 321 stainless steel heat exchanger and 409 stainless steel burner and draft diverter/flue collector options (Furnace Material [FM] Model Digit 6). **An optional 409 or 321 Stainless Steel heat exchanger is recommended for the following applications:**

1. When the combined temperature of outside and return air is below 40°F (4.4°C).
2. Whenever there is an evaporative cooler or cooling coil upstream of the furnace section(s).

### Unit Type [UT] Digit 1,2

MU - Natural Vent Indoor Make-Up Air Unit  
 ME - Power Vented Indoor Make-Up Air Unit  
 MS - Separated Combustion Indoor Make-Up Air Unit

### Capacity [CA] Digit 3,4

Single Furnace*	Double Furnace
10 - 100 MBH	50 - 500 MBH
15 - 150 MBH	60 - 600 MBH
20 - 200 MBH	70 - 700 MBH
25 - 250 MBH	80 - 800 MBH
30 - 300 MBH	
35 - 350 MBH	Triple Furnace
40 - 400 MBH	12 - 1,200 MBH

### Furnace Type [FT] Digit 5

A - Standard Temperature Rise, Right Side Access  
 B - Standard Temperature Rise, Left Side Access

### Furnace Material [FM] Digit 6

- 1 - Aluminized Steel (STANDARD)
- 2 - 409 Stainless Steel Heat Exchanger (First Furnace Only)
- 3 - 409 Stainless Steel Heat Exchanger (All Furnace Sections)
- 4 - 321 Stainless Steel Heat Exchanger (First Furnace Only)
- 5 - 321 Stainless Steel Heat Exchanger (All Furnace Sections)
- 6 - 409 Stainless Steel Package, Heat Exchanger, Burners Flue Collector (First Furnace Only)
- 7 - 409 Stainless Steel Package, Heat Exchanger, Burners Flue Collector (All Furnace Sections)
- 8 - 321 Stainless Steel Package, Heat Exchanger, 409 Burners, Flue Collector (First Furnace Only)
- 9 - 321 Stainless Steel Package, Heat Exchanger, 409 Burners, Flue Collector (All Furnace Sections)

### Indoor Arrangement [IA] Digit 7

A - Duct Furnace (Available in Capacities [CA] 50 through 80 and 12 Only)

*\*Single Furnace Capacities [CA 10/40] available only on Indoor Arrangements [IA] B, D, and K; Single Furnace Capacities [CA 20/40] available on Arrangement [IA] G.*

# Indoor Duct Furnace Performance Data — Table 1

Unit Type [UT] MU, ME or MS; Capacity 10-12; Furnace Type A or B

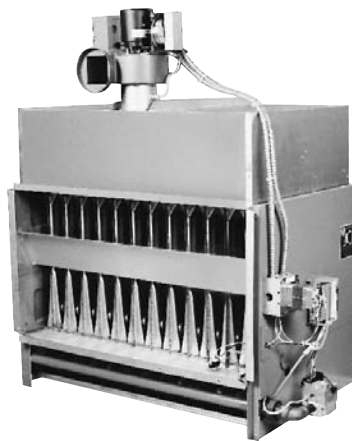
Capacity (CA)	Input		Output	Min. CFM (cu. m/s)	Temp. Rise F. Deg. (C. Deg.)	P.D. in. W.C. (kPa)	Max. CFM (cu. m/s)	Temp. Rise F. Deg. (C. Deg.)	P.D. in. W.C. (kPa)
	(Max.) MBH (kW)	(Min.) MBH (kW)	MBH (kW)						
10	100	50	80	929	80	0.12	2,469	30	0.90
	(29.3)	(14.6)	(23.4)	(0.438)	(44)	(0.03)	(1.165)	(17)	(0.22)
15	150	75	120	1,389	80	0.15	3,704	30	0.75
	(43.9)	(22.0)	(35.1)	(0.656)	(44)	(0.04)	(1.748)	(17)	(0.19)
20	200	100	160	1,852	80	0.14	4,938	30	0.75
	(58.6)	(29.3)	(46.9)	(0.874)	(44)	(0.03)	(2.331)	(17)	(0.19)
25	250	125	200	2,315	80	0.14	6,173	30	0.80
	(73.2)	(36.6)	(58.6)	(1.093)	(44)	(0.03)	(2.914)	(17)	(0.20)
30	300	150	240	2,778	80	0.13	7,407	30	0.90
	(87.8)	(43.9)	(70.3)	(1.311)	(44)	(0.03)	(3.496)	(17)	(0.22)
35	350	175	280	3,241	80	0.13	8,642	30	0.90
	(102.5)	(51.2)	(82.0)	(1.530)	(44)	(0.03)	(4.079)	(17)	(0.22)
40	400	200	320	3,704	80	0.14	9,877	30	0.90
	(117.1)	(58.6)	(93.7)	(1.748)	(44)	(0.03)	(4.662)	(17)	(0.22)
50	500	250	400	2,315	160	0.28	6,173	60	1.28
	(146.4)	(73.2)	(117.1)	(1.093)	(89)	(0.07)	(2.914)	(33)	(0.32)
60	600	300	480	2,778	160	0.26	7,407	60	1.38
	(175.7)	(87.8)	(140.6)	(1.311)	(89)	(0.06)	(3.496)	(33)	(0.34)
70	700	350	560	3,241	160	0.26	8,642	60	1.37
	(205.0)	(102.5)	(164.0)	(1.530)	(89)	(0.06)	(4.079)	(33)	(0.34)
80	800	400	640	3,704	160	0.28	9,877	60	1.39
	(234.3)	(117.1)	(187.4)	(1.748)	(89)	(0.07)	(4.662)	(33)	(0.35)
12	1200	600	960	3,704	180	0.42	9,877	90	1.88
	(351.4)	(175.7)	(281.1)	(1.748)	(100)	(0.10)	(4.662)	(50)	(0.47)

NOTES: Rating shown are for unit installations at elevations between 0 and 2,000 ft. (610m). For unit installations in U.S.A. above 2,000 ft. (610m), the unit input must be derated 4% for each 1,000 ft. (305m) above sea level; refer to local codes, or in absence of local codes, refer to the latest edition of the National Fuel Gas Code, ANSI Standard Z223.1 (N.F.P.A. No. 54).

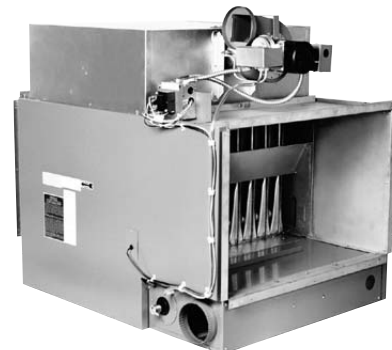
For installations in Canada, any references to deration at altitudes in excess of 2,000 ft. (610m) are to be ignored. At altitudes of 2,000 to 4,500 ft. (610 to 1372m), the unit must be derated to 90% of the normal altitude rating, and be so marked in accordance with the CSA certification.



“MU”  
Natural Vent  
Duct Furnace [QVS]



“ME”  
Power Vent  
Duct Furnace [QVES]



“MS”  
Separated Combustion  
Duct Furnace [QVSD]

# Packaged Indoor Arrangements Heating & Cooling Units

## Indoor Arrangement [IA] Model Digit 7

Sterling Packaged Indoor Arrangements are designed to UL-1995 standard for heating, cooling and ventilating equipment. Units are available in one of 5 standard arrangements (Indoor Arrangements [IA], Model digit 7). Packaged heating and cooling units are suitable for commercial, institutional and industrial applications where external system pressure losses are as high as 2 in. W.C. (0.50 kPa).

Indoor Arrangements are divided into two classifications "Standard" and "High-CFM" Blower types. The "Standard" blower units (Indoor Arrangement [IA] "B, D") have a CFM range of 922-9,831 (0.4 - 4.6 m<sup>3</sup>/s). The Standard blower arrangement consists of a blower cabinet that houses dampers, filters and blower(s) in one cabinet; an optional Evaporative Cooling Unit with standard 8 or optional 12 in. (203 or 305 mm) media; and up to 2 Duct Furnaces (800 MBH Max.) (234.3 kW Max.) may also be included.

The "High-CFM" Blower Units (Indoor Arrangement [IA] "G") have a range of 1,843 - 9,800 CFM (0.4 - 4.6 m<sup>3</sup>/s). This High-CFM Blower unit utilizes a separate Damper/Filter cabinet with a "V" bank filter arrangement, a Blower Cabinet and up to 3 Duct Furnaces (1,200 MBH Max.) (351.4 kW Max.). Indoor Arrangement "K" utilizes the same cabinetry as Indoor Arrangement "G", plus an additional Coil Cabinet with up to two duct furnaces 800 MBH (234.3 kW) Max. We offer DX or Chilled Water type cooling coils (capable of up to 20 tons nominal, under standard operating conditions), with a CFM range of 1,000 to 6,500 (0.5 - 3.1 m<sup>3</sup>/s). For cooling applications utilizing Arrangement "K" above 6,500 CFM (3.1 m<sup>3</sup>/s), a 2 speed blower motor will be required. The cabinetry included with Indoor Arrangement "K" is also suitable for field installations of heating coils.

For your safety and convenience, all Sterling Packaged Heating and Cooling Units include: a 24 Volt control circuit; Solid State Fan Time Delay; 24 Volt in line Circuit Breaker; Blower Door Interlock Switch; a Reverse Air Flow Switch (Return Firestat); Pre-wired Fan On and Exhaust Fan Interlock Relay Sockets; and a Printed Circuit Main Connection Board with Terminal Block Wiring. All wiring is processed at our factory as harness assemblies and each wire is permanently stamped with it's wire number.

All cabinets are constructed of rugged 18 ga. material and painted Sterling gray. The modular design of the cabinetry insures reliability as well as serviceability with quick-release door latches and insulated blower filter cabinets.

### Indoor Arrangements [IA] Digit 7

- A - Dual or Triple Duct Furnaces Only
- B - Blower (STANDARD)
- D - Blower (STANDARD) / Evaporative Cooler
- G - Blower (HIGH-CFM)
- K - Blower (HIGH-CFM) / Coil Cabinet



Standard Blower Unit



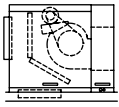
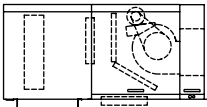
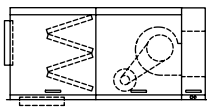
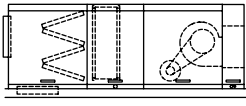
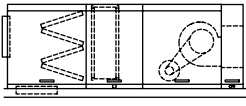
High-CFM Blower Unit



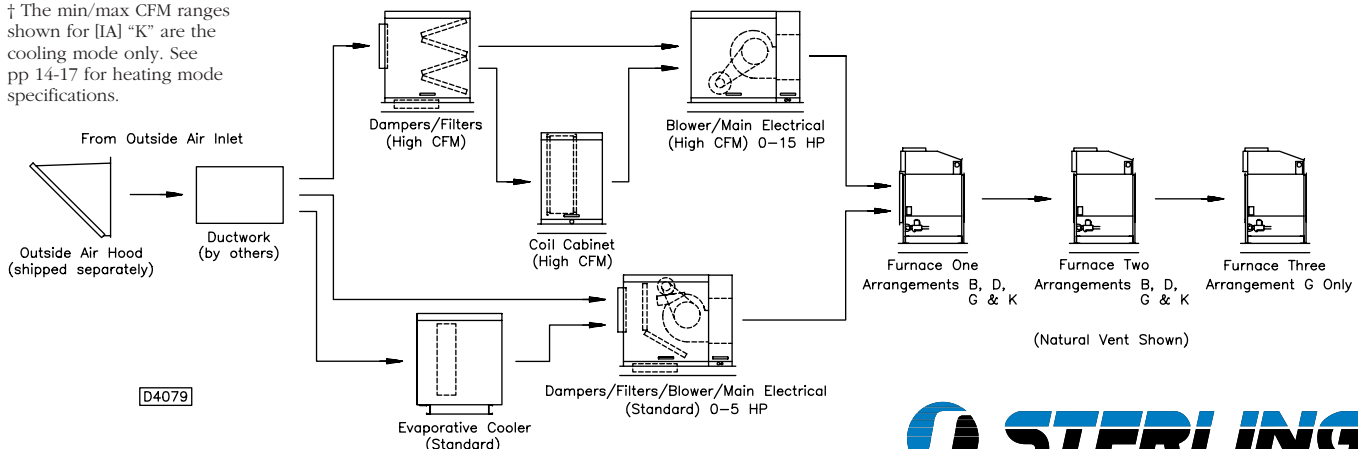
# Packaged Indoor Arrangement Reference

## Unit Types [UT] MU, ME or MS

\* The maximum CFM for Indoor Arrangement K is 6,500 (3.1 m<sup>3</sup>/s). A two speed motor may be utilized for non-cooling air flow up to 9,831 CFM (4.6 m<sup>3</sup>/s).

	Furnace Type A, B ΔT30°-80°	Furnace Type A, B ΔT60°-160°	Furnace Type A, B ΔT90°-180°
<p>Standard Blower Indoor Arrangement B</p> 	<p><b>Capacity 10 - 40</b></p> <p>10 - 922 - 2,458 CFM, 1/2 - 3 HP. 15 - 1,382 - 3,687 CFM, 1/2 - 5 HP. 20 - 1,843 - 4,916 CFM, 1/2 - 5 HP. 25 - 2,304 - 6,144 CFM, 1/2 - 5 HP. 30 - 2,765 - 7,373 CFM, 3/4 - 5 HP. 35 - 3,226 - 8,602 CFM, 3/4 - 5 HP. 40 - 3,687 - 9,831 CFM, 3/4 - 5 HP.</p> <p>TSP 0.1 - 2 in. W.C. <b>Chart #1 Tables #2, 3</b></p>	<p><b>Capacity 50 - 80</b></p> <p>50 - 2,304 - 6,144 CFM, 1/2 - 5 HP. 60 - 2,765 - 7,373 CFM, 3/4 - 5 HP. 70 - 3,226 - 8,602 CFM, 1/2 - 5 HP. 80 - 3,687 - 9,831 CFM, 3/4 - 5 HP.</p> <p>TSP 0.1 - 2 in. W.C. <b>Chart #1 Tables #2, 3</b></p>	<p>NA</p>
<p>Standard Blower w/Evap. Indoor Arrangement D</p> 	<p><b>Capacity 10-40</b></p> <p>10 - 922 - 2,458 CFM, 1/2 - 3 HP. 15 - 1,382 - 3,687 CFM, 1/2 - 5 HP. 20 - 1,843 - 4,916 CFM, 1/2 - 5 HP. 25 - 2,304 - 6,144 CFM, 1/2 - 5 HP. 30 - 2,765 - 7,373 CFM, 1/2 - 5 HP. 35 - 3,226 - 8,602 CFM, 3/4 - 5 HP. 40 - 3,687 - 9,831 CFM, 3/4 - 5 HP.</p> <p>TSP 0.1 - 2 in. W.C. <b>Chart #1 Tables #2, 3</b></p>	<p><b>Capacity 50-80</b></p> <p>50 - 2,304 - 6,144 CFM, 1/2 - 5 HP. 60 - 2,765 - 7,373 CFM, 3/4 - 5 HP. 70 - 3,226 - 8,602 CFM, 1/2 - 5 HP. 80 - 3,687 - 9,831 CFM, 3/4 - 5 HP.</p> <p>TSP 0.1 - 2 in. W.C. <b>Chart #1 Tables #2, 3</b></p>	<p>NA</p>
<p>High CFM Blower Indoor Arrangement G</p> 	<p><b>Capacity 20 - 40</b></p> <p>20 - 1,843 - 4,916 CFM, 1/2 - 5 HP. 25 - 2,304 - 6,144 CFM, 1/2 - 7 1/2 HP. 30 - 2,765 - 7,373 CFM, 1/2 - 7 1/2 HP. 35 - 3,226 - 8,602 CFM, 3/4 - 10 HP. 40 - 3,687 - 9,831 CFM, 3/4 - 10 HP.</p> <p>TSP 0.1 - 2 in. W.C. <b>Chart #2 Tables #4, 5</b></p>	<p><b>Capacity 50 - 80</b></p> <p>50 - 2,304 - 6,144 CFM, 1/2 - 10 HP. 60 - 2,765 - 7,373 CFM, 1/2 - 10 HP. 70 - 3,226 - 8,602 CFM, 1/2 - 10 HP. 80 - 3,687 - 9,831 CFM, 3/4 - 15 HP.</p> <p>TSP 0.1 - 2 in. W.C. <b>Chart #2 Tables #4, 5</b></p>	<p><b>Capacity 12</b></p> <p>12 - 4,916 - 9,831 CFM, 1 - 15 HP.</p> <p>TSP 0.1 - 2 in. W.C. <b>Chart #5 Tables #4, 5</b></p>
<p>High CFM Blower w/DX Cooling Indoor Arrangement K*†</p> 	<p><b>Capacity 10 - 40</b></p> <p>10 - 1,600 - 2,400 CFM, 1/2 - 5 HP. 15 - 1,600 - 3,000 CFM, 1/2 - 5 HP. 20 - 2,100 - 4,400 CFM, 1/2 - 5 HP. 25 - 2,500 - 4,400 CFM, 1/2 - 5 HP. 30 - 2,800 - 5,800 CFM, 1/2 - 7 1/2 HP. 35 - 3,200 - 5,800 CFM, 3/4 - 7 1/2 HP. 40 - 3,700 - 6,500 CFM, 3/4 - 7 1/2 HP.</p> <p>TSP 0.1 - 2 in. W.C. <b>Chart #2 Tables #4, 5, 10 (A &amp; B)</b></p>	<p><b>Capacity 50 - 80</b></p> <p>50 - 2,500 - 4,400 CFM, 1 - 5 HP. 60 - 2,800 - 5,800 CFM, 3/4 - 7 1/2 HP. 70 - 3,200 - 5,800 CFM, 3/4 - 7 1/2 HP. 80 - 3,700 - 6,500 CFM, 3/4 - 7 1/2 HP.</p> <p>TSP 0.1 - 2 in. W.C. <b>Chart #2 Tables #4, 5, 10 (A &amp; B)</b></p>	<p>NA</p>
<p>High CFM Blower w/Chilled Water Cooling Indoor Arrangement K †</p> 	<p><b>Capacity 10 - 40</b></p> <p>10 - 1,000 - 2,400 CFM, 1/2 - 5 HP. 15 - 1,400 - 2,900 CFM, 1/2 - 5 HP. 20 - 1,800 - 4,300 CFM, 1/2 - 5 HP. 25 - 2,300 - 4,300 CFM, 1/2 - 5 HP. 30 - 2,700 - 5,700 CFM, 1/2 - 7 1/2 HP. 35 - 3,200 - 5,700 CFM, 3/4 - 7 1/2 HP. 40 - 3,700 - 6,300 CFM, 3/4 - 7 1/2 HP.</p> <p>TSP 0.1 - 2 in. W.C. <b>Chart #2 Tables #4, 5, 11 (A &amp; B)</b></p>	<p><b>Capacity 50 - 80</b></p> <p>50 - 2,300 - 4,300 CFM, 1/2 - 5 HP. 60 - 2,700 - 5,700 CFM, 3/4 - 7 1/2 HP. 70 - 3,200 - 5,700 CFM, 3/4 - 7 1/2 HP. 80 - 3,700 - 6,300 CFM, 3/4 - 7 1/2 HP.</p> <p>TSP 0.1 - 2 in. W.C. <b>Chart #2 Tables #4, 5, 11 (A &amp; B)</b></p>	<p>NA</p>

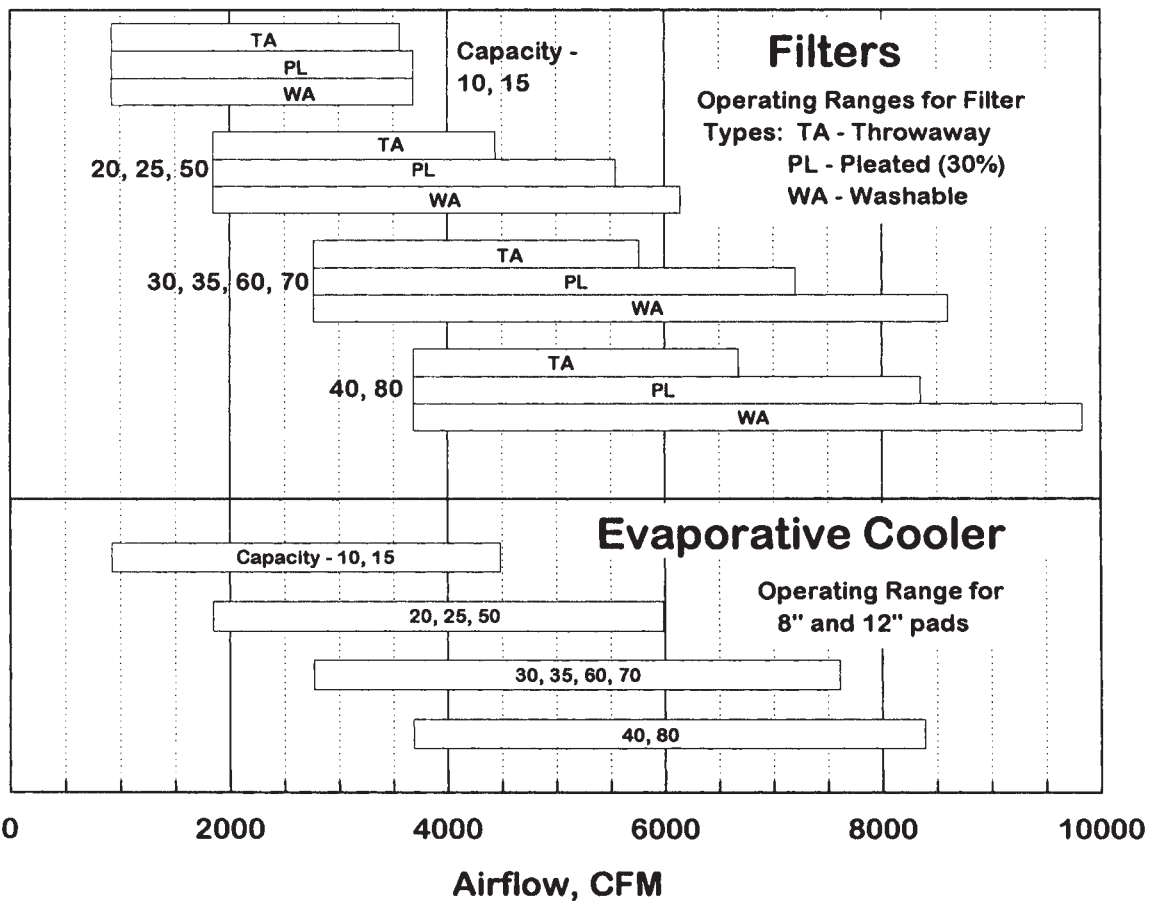
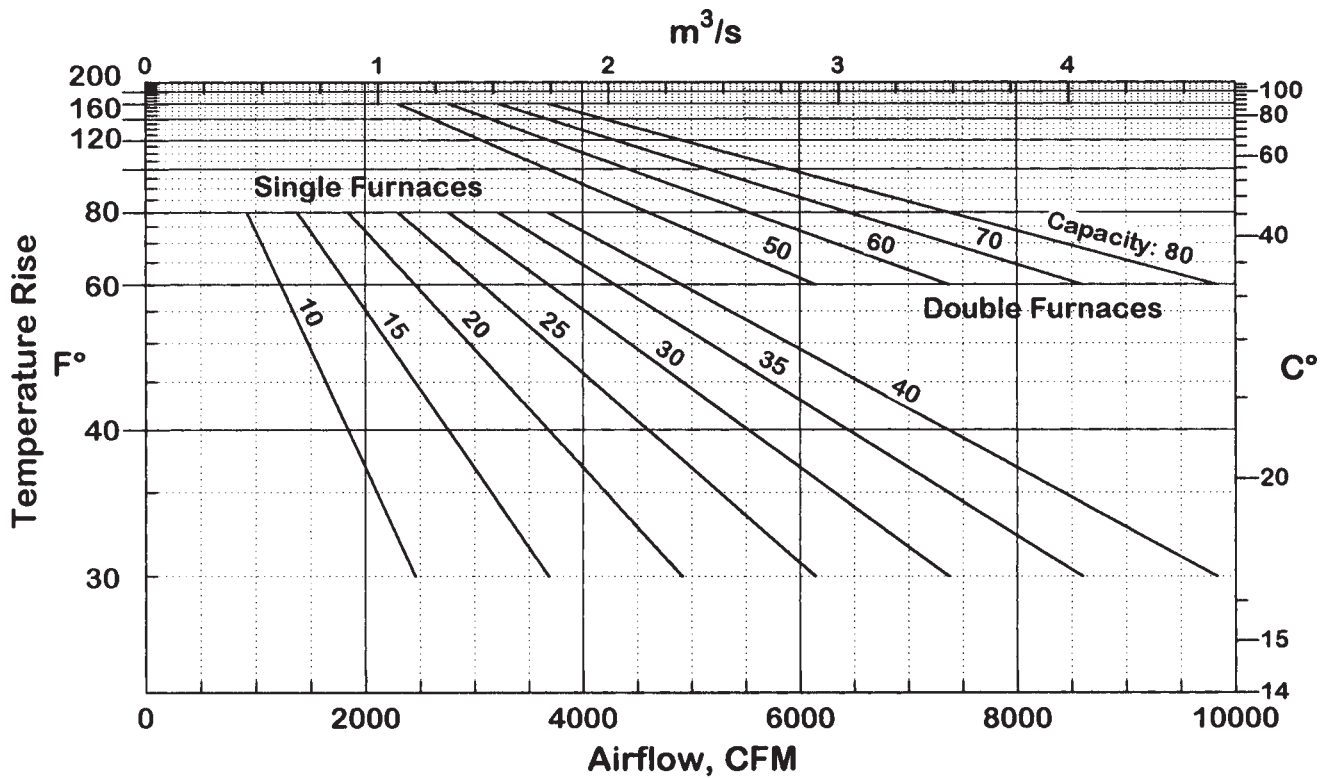
† The min/max CFM ranges shown for [IA] "K" are the cooling mode only. See pp 14-17 for heating mode specifications.



# Quick Sizer Chart No. 1

Furnace Type - (A,B) Standard Temperature Rise

Indoor Arrangements - (B,D)





# Accessory Pressure Loss — Table 3

## Indoor Arrangements - (B,D)

**PRESSURE LOSS (INCHES OF WATER)**

Capacity	CFM	(Opt'l) Rainhood												Return or Outside Air Damper
		With Screen		Mstr. Elim.		Throwaway		Filters		Pleated		Evaporative Cooling Pad		
		2"	1"	2"	1"	2"	1"	2"	1"	2"	8"	12"		
10	900	.01	.02	.03	<.01	<.01	<.01	<.01	.03	.02	<.01	.01	.02	.02
	1,000	.01	.02	.04	<.01	<.01	<.01	<.01	.04	.02	<.01	.01	.02	.02
	1,200	.02	.03	.05	<.01	<.01	<.01	<.01	.05	.03	.02	.02	.02	.03
	1,400	.03	.04	.06	<.01	<.01	.01	.02	.06	.03	.02	.02	.03	.04
	1,600	.04	.05	.07	.01	.02	.02	.02	.08	.04	.03	.04	.04	.06
	1,800	.05	.06	.08	.02	.02	.02	.02	.10	.05	.04	.06	.06	.07
	2,000	.06	.07	.09	.02	.03	.03	.03	.12	.07	.05	.07	.07	.09
	2,200	.07	.09	.10	.02	.03	.03	.03	.14	.08	.06	.06	.08	.10
	2,400	.08	.11	.12	.03	.04	.04	.04	.16	.09	.07	.10	.10	.12
	1,400	.03	.04	.06	<.01	.01	.01	.01	.06	.03	.02	.02	.03	.04
	1,500	.03	.04	.06	.01	.02	.02	.02	.07	.04	.03	.04	.04	.05
	2,000	.06	.07	.09	.02	.03	.03	.03	.12	.07	.05	.07	.07	.09
15	2,500	.09	.12	.12	.03	.04	.04	.17	.10	.07	.11	.11	.13	
	3,000	.13	.17	.16	.04	.06	.06	.23	.14	.10	.15	.15	.19	
	3,500	.18	.23	.19	.06	.08	.08	.30	.18	.14	.21	.21	.25	
	3,600	.19	.24	—	.06	.09	.09	.31	.19	.15	.22	.22	.27	
	1,800	.02	.03	.06	<.01	.01	.01	.07	.04	.02	.02	.03	.03	
	2,000	.03	.04	.07	.01	.02	.02	.08	.04	.03	.04	.04	.04	
	2,500	.04	.06	.09	.02	.03	.03	.12	.07	.04	.06	.06	.06	
	3,000	.06	.08	.12	.03	.04	.04	.16	.09	.06	.09	.08	.08	
	3,500	.09	.11	.14	.04	.05	.05	.21	.12	.08	.12	.11	.11	
	4,000	.11	.15	.17	.05	.07	.07	.26	.16	.10	.15	.15	.15	
	4,500	.14	.19	—	.06	.09	.09	.31	.19	.13	.20	.19	.19	
	4,900	.17	.22	—	.07	.10	.10	.36	.22	.16	.23	.22	.22	
20	2,300	.04	.05	.08	.02	.02	.10	.06	.03	.03	.05	.05	.05	
	2,500	.04	.06	.09	.02	.03	.12	.07	.04	.06	.06	.06	.06	
	3,000	.06	.08	.12	.03	.04	.16	.09	.06	.09	.08	.08	.08	
	3,500	.09	.11	.14	.04	.05	.21	.12	.08	.12	.11	.11	.11	
	4,000	.11	.15	.17	.05	.07	.26	.16	.10	.15	.15	.15	.15	
	4,500	.14	.19	—	.06	.09	.31	.19	.13	.20	.19	.19	.19	
	5,000	.17	.23	—	.07	.11	.38	.24	.23	.16	.24	.23	.23	
	5,500	.21	.28	—	.09	.13	.44	.29	.28	.20	.29	.28	.28	
	2,700	.03	.04	.07	.01	.02	.09	.05	.04	.03	.04	.04	.04	
	3,000	.04	.05	.08	.02	.02	.10	.06	.05	.04	.05	.05	.05	
	4,000	.06	.09	.12	.03	.04	.17	.10	.06	.10	.08	.08	.08	
	5,000	.10	.13	.16	.04	.06	.24	.14	.10	.15	.13	.13	.13	
30	6,000	.14	.19	—	.06	.09	.33	.20	.14	.21	.19	.19	.19	
	7,000	.20	.26	—	.09	.13	.43	.27	.20	.29	.25	.25	.25	
	8,000	.26	.34	—	.11	.16	.51	.34	.25	.33	.28	.28	.28	
	8,500	.29	.39	—	.13	.18	.57	.37	.28	.37	.31	.31	.31	
	3,200	.04	.05	.09	.02	.03	.11	.06	.06	.06	.06	.05	.05	
	4,000	.06	.09	.12	.03	.04	.17	.10	.06	.10	.08	.08	.08	
	5,000	.10	.13	.16	.04	.06	.24	.14	.10	.15	.13	.13	.13	
	6,000	.14	.19	—	.06	.09	.33	.20	.14	.21	.19	.19	.19	
	7,000	.20	.26	—	.09	.13	.43	.27	.20	.29	.25	.25	.25	
	8,000	.26	.34	—	.11	.16	.51	.34	.25	.33	.28	.28	.28	
	8,500	.29	.39	—	.13	.18	.57	.37	.28	.37	.31	.31	.31	

# Accessory Pressure Loss — Table 3 *continued*

## Indoor Arrangements - (B,D)

### PRESSURE LOSS (INCHES OF WATER)

Capacity	CFM	(Opt'D) Rainhood										Return or Outside Air Damper	
		With Screen		Mstr. Elim.		Throwaway		Filters		Evaporative Cooling Pad			
		Screen	Mstr. Elim.	2"	1"	Washable	Pleated	1"	2"	8"	12"		
40	3,700	.04	.06	.09	.02	.03	.11	.06	.04	.07	.06	.07	.06
	4,000	.05	.07	.10	.02	.03	.13	.07	.05	.08	.07	.08	.07
	5,000	.08	.11	.13	.03	.05	.19	.11	.08	.12	.10	.12	.10
	6,000	.11	.15	.17	.05	.07	.26	.16	.12	.18	.15	.18	.15
	7,000	.16	.21	—	.07	.09	.33	.21	.16	.24	.20	.24	.20
	8,000	.20	.27	—	.09	.12	.42	.26	.21	.31	.26	.31	.26
	8,500	.23	.31	—	.10	.14	—	—	—	—	—	—	.30
	2,300	.04	.05	.08	.02	.02	.10	.06	.03	.05	.05	.05	.05
	2,500	.04	.06	.09	.02	.03	.12	.07	.04	.06	.06	.06	.06
	3,000	.06	.08	.12	.03	.04	.16	.09	.06	.09	.08	.09	.08
50	3,500	.09	.11	.14	.04	.05	.21	.12	.08	.11	.11	.12	.11
	4,000	.11	.15	.17	.05	.07	.26	.16	.10	.15	.15	.15	.15
	4,500	.14	.19	—	.06	.09	.31	.19	.13	.20	.19	.20	.19
	5,000	.17	.23	—	.07	.11	.38	.23	.16	.24	.23	.24	.23
	5,200	.19	.25	—	.08	.12	.40	.25	.17	.26	.25	.26	.25
	2,700	.03	.04	.07	.01	.02	.09	.05	.03	.04	.04	.04	.04
	3,000	.04	.05	.08	.02	.02	.10	.06	.04	.05	.05	.05	.05
	4,000	.06	.09	.12	.03	.04	.17	.10	.06	.10	.08	.10	.08
	5,000	.10	.13	.16	.04	.06	.24	.14	.10	.15	.13	.15	.13
	6,000	.14	.19	—	.06	.09	.33	.20	.14	.21	.19	.21	.19
60	7,000	.20	.26	—	.09	.13	.43	.27	.20	.25	.25	.25	.25
	7,500	.22	.30	—	.10	.14	—	—	.22	.29	.29	.29	.29
	3,200	.04	.05	.09	.02	.03	.11	.06	.04	.05	.05	.06	.05
	4,000	.06	.09	.12	.03	.04	.17	.10	.06	.10	.08	.10	.08
	5,000	.10	.13	.16	.04	.06	.24	.14	.10	.15	.13	.15	.13
	6,000	.14	.19	—	.06	.09	.33	.20	.14	.21	.19	.21	.19
	7,000	.20	.26	—	.09	.13	.43	.27	.20	.29	.25	.29	.25
	7,500	.22	.30	—	.10	.14	—	—	.22	.34	.29	.34	.29
	3,700	.04	.06	.09	.02	.03	.11	.06	.04	.05	.06	.07	.06
	4,000	.05	.07	.10	.02	.03	.13	.07	.05	.08	.07	.08	.07
80	5,000	.08	.11	.13	.03	.05	.19	.11	.08	.12	.10	.12	.10
	6,000	.11	.15	.17	.05	.07	.26	.16	.12	.18	.15	.18	.15
	7,000	.16	.21	—	.07	.09	.33	.21	.16	.24	.20	.24	.20
	7,500	.18	.24	—	.07	.11	.38	.23	.16	.24	.23	.28	.23







# Accessory Pressure Loss — Table 5

## Indoor Arrangement - (G,K)

Capacity	CFM	PRESSURE LOSS (INCHES OF WATER)												Return or Outside Air Damper
		(Opt'l) Rainhood						Filters						
		With			Throwaway			Washable			Pleated			
		Screen	Mstr. Elim.	2"	2"	1"	1"	1"	1"	2"	1"	1"	2"	
*10	1,000	.01	.02	.01	.01	<.01	<.01	<.01	<.01	.01	.01	<.01	.02	
	1,200	.02	.03	.02	.02	<.01	<.01	<.01	<.01	.02	.02	<.01	.03	
	1,400	.03	.04	.02	.02	<.01	<.01	<.01	<.01	.02	.02	<.01	.04	
	1,600	.04	.05	.03	.03	<.01	<.01	<.01	<.01	.03	.03	.01	.06	
	1,800	.05	.06	.03	.03	<.01	<.01	<.01	<.01	.03	.03	.02	.07	
	2,000	.06	.07	.04	.04	<.01	<.01	<.01	<.01	.04	.04	.02	.09	
	2,200	.07	.09	.04	.04	<.01	<.01	<.01	<.01	.04	.04	.02	.10	
	2,400	.08	.11	.05	.05	<.01	<.01	<.01	<.01	.05	.05	.03	.12	
	1,400	.03	.04	.02	.02	<.01	<.01	<.01	<.01	.02	.02	<.01	.04	
	1,500	.03	.04	.02	.02	<.01	<.01	<.01	<.01	.02	.02	.01	.05	
2,000	.06	.07	.04	.04	<.01	<.01	<.01	<.01	.04	.04	.02	.09		
*15	2,500	.09	.12	.05	.05	<.01	<.01	.01	.02	.05	.05	.03	.13	
	3,000	.13	.17	.06	.06	.01	.02	.02	.04	.07	.07	.04	.19	
	3,500	.18	.23	.08	.08	.01	.02	.02	.05	.09	.09	.05	.25	
	3,600	.19	.24	.08	.08	.02	.02	.02	.05	.10	.10	.05	.27	
	1,800	.02	.03	.03	.03	<.01	<.01	<.01	<.01	.03	.03	.02	.03	
	2,000	.03	.04	.04	.04	<.01	<.01	<.01	<.01	.04	.04	.02	.04	
	2,500	.04	.06	.05	.05	<.01	<.01	.01	.02	.05	.05	.03	.06	
	3,000	.06	.08	.06	.06	.01	.02	.02	.04	.07	.07	.04	.08	
	3,500	.09	.11	.08	.08	.01	.02	.02	.05	.09	.09	.05	.11	
	4,000	.11	.15	.09	.09	.02	.03	.03	.05	.12	.12	.07	.15	
20	4,500	.14	.19	.11	.11	.02	.03	.03	.08	.14	.14	.08	.19	
	4,900	.17	.22	.12	.12	.03	.04	.04	.10	.16	.16	.10	.22	
	2,300	.04	.05	.04	.04	<.01	<.01	<.01	.05	.05	.05	.02	.05	
	2,500	.04	.06	.05	.05	<.01	<.01	.01	.05	.05	.05	.03	.06	
	3,000	.06	.08	.06	.06	.01	.02	.02	.07	.07	.07	.04	.08	
	3,500	.09	.11	.08	.08	.01	.02	.02	.09	.09	.09	.05	.11	
	4,000	.11	.15	.09	.09	.02	.03	.03	.12	.12	.12	.07	.15	
	4,500	.14	.19	.11	.11	.02	.03	.03	.14	.14	.14	.08	.19	
	5,000	.17	.23	.12	.12	.03	.04	.04	.17	.17	.17	.10	.23	
	5,500	.21	.28	.14	.14	.04	.05	.05	.20	.20	.20	.12	.28	
25	2,700	.03	.04	.03	.03	<.01	<.01	<.01	.03	.03	.03	.01	.04	
	3,000	.04	.05	.03	.03	<.01	<.01	<.01	.03	.03	.03	.02	.05	
	4,000	.06	.09	.05	.05	<.01	<.01	.01	.05	.05	.05	.03	.08	
	5,000	.10	.13	.06	.06	.01	.02	.02	.08	.08	.08	.04	.13	
	6,000	.14	.19	.08	.08	.02	.02	.02	.10	.10	.10	.06	.19	
	7,000	.20	.26	.10	.10	.02	.03	.03	.13	.13	.13	.08	.25	
	7,400	.22	.29	.11	.11	.02	.03	.03	.15	.15	.15	.08	.28	
	3,200	.04	.05	.03	.03	<.01	<.01	<.01	.04	.04	.04	.02	.05	
	4,000	.06	.09	.05	.05	<.01	<.01	.01	.05	.05	.05	.03	.08	
	5,000	.10	.13	.06	.06	.01	.02	.02	.08	.08	.08	.04	.13	
30	6,000	.14	.19	.08	.08	.02	.02	.02	.10	.10	.10	.06	.19	
	7,000	.20	.26	.10	.10	.02	.03	.03	.13	.13	.13	.08	.25	
	7,400	.22	.29	.11	.11	.02	.03	.03	.15	.15	.15	.08	.28	
	3,200	.04	.05	.03	.03	<.01	<.01	<.01	.04	.04	.04	.02	.05	
	4,000	.06	.09	.05	.05	<.01	<.01	.01	.05	.05	.05	.03	.08	
	5,000	.10	.13	.06	.06	.01	.02	.02	.08	.08	.08	.04	.13	
	6,000	.14	.19	.08	.08	.02	.02	.02	.10	.10	.10	.06	.19	
	7,000	.20	.26	.10	.10	.02	.03	.03	.13	.13	.13	.08	.25	
	8,000	.26	.34	.12	.12	.03	.04	.04	.17	.17	.17	.10	.33	
	8,600	.30	.40	.13	.13	.03	.05	.05	.19	.19	.19	.11	.38	



# Accessory Pressure Loss — Table 5 *continued*

## Indoor Arrangement - (G,K)

### PRESSURE LOSS (INCHES OF WATER)

Capacity	CFM	(Opt'l) Rainhood										Return or Outside Air Dampener
		With		Throwaway		Filters		Pleated		2"	1"	
		Screen	Mstr. Elim.	2"	1"	Washable	1"	2"				
40	3,700	.04	.06	.03	<.01	<.01	<.01	.04	.02	.06	.06	
	4,000	.05	.07	.04	<.01	<.01	<.01	.04	.02	.07		
	5,000	.08	.11	.05	<.01	<.01	<.01	.06	.03	.10		
	6,000	.11	.15	.07	.01	.02	.02	.08	.04	.15		
	7,000	.16	.21	.08	.02	.02	.02	.10	.06	.20		
	8,000	.20	.27	.10	.02	.03	.03	.13	.07	.26		
	9,000	.26	.35	.12	.03	.04	.04	.16	.09	.33		
	9,800	.31	.41	.13	.03	.05	.05	.18	.11	.39		
	2,300	.04	.05	.04	<.01	<.01	<.01	.05	.02	.05		
	2,500	.04	.06	.05	<.01	<.01	<.01	.05	.03	.06		
50	3,000	.06	.08	.06	.01	.02	.02	.07	.04	.08		
	3,500	.09	.11	.08	.01	.02	.02	.09	.05	.11		
	4,000	.11	.15	.09	.02	.03	.03	.12	.07	.15		
	4,500	.14	.19	.11	.02	.03	.03	.14	.08	.19		
	5,000	.17	.23	.12	.03	.04	.04	.17	.10	.23		
	5,500	.21	.28	.14	.04	.05	.05	.20	.12	.28		
	6,000	.25	.33	.16	.04	.06	.06	.23	.14	.33		
	2,700	.03	.04	.03	<.01	<.01	<.01	.03	.01	.04		
	3,000	.04	.05	.03	<.01	<.01	<.01	.03	.02	.05		
	4,000	.06	.09	.05	<.01	.01	.01	.05	.03	.08		
60	5,000	.10	.13	.06	.01	.02	.02	.08	.04	.13		
	6,000	.14	.19	.08	.02	.02	.02	.10	.06	.19		
	7,000	.20	.26	.10	.02	.03	.03	.13	.08	.25		
	8,000	.26	.34	.12	.03	.04	.04	.17	.10	.33		
	8,600	.30	.40	.13	.03	.05	.05	.19	.11	.38		
	3,200	.04	.05	.03	<.01	<.01	<.01	.04	.02	.05		
	4,000	.06	.09	.05	<.01	.01	.01	.05	.03	.08		
	5,000	.10	.13	.06	.01	.02	.02	.08	.04	.13		
	6,000	.14	.19	.08	.02	.02	.02	.10	.06	.19		
	7,000	.20	.26	.10	.02	.03	.03	.13	.08	.25		
80	8,000	.26	.34	.12	.03	.04	.04	.17	.10	.33		
	8,600	.30	.40	.13	.03	.05	.05	.19	.11	.38		
	3,700	.04	.06	.03	<.01	<.01	<.01	.04	.02	.06		
	4,000	.05	.07	.04	<.01	<.01	<.01	.04	.02	.07		
	5,000	.08	.11	.05	<.01	.01	.01	.06	.03	.10		
	6,000	.11	.15	.07	.01	.02	.02	.08	.04	.15		
	7,000	.16	.21	.08	.02	.02	.02	.10	.06	.20		
	8,000	.20	.27	.10	.02	.03	.03	.13	.07	.26		
	9,000	.26	.35	.12	.03	.04	.04	.16	.09	.33		
	9,800	.31	.41	.13	.03	.05	.05	.18	.11	.39		
12	4,500	.06	.09	.05	<.01	<.01	<.01	.05	.03	.08		
	5,000	.08	.11	.05	<.01	.01	.01	.06	.03	.10		
	6,000	.11	.15	.07	.01	.02	.02	.08	.04	.15		
	7,000	.16	.21	.08	.02	.02	.02	.10	.06	.20		
	8,000	.20	.27	.10	.02	.03	.03	.13	.07	.26		
	9,000	.26	.35	.12	.03	.04	.04	.16	.09	.33		
	9,800	.31	.41	.13	.03	.05	.05	.18	.11	.39		

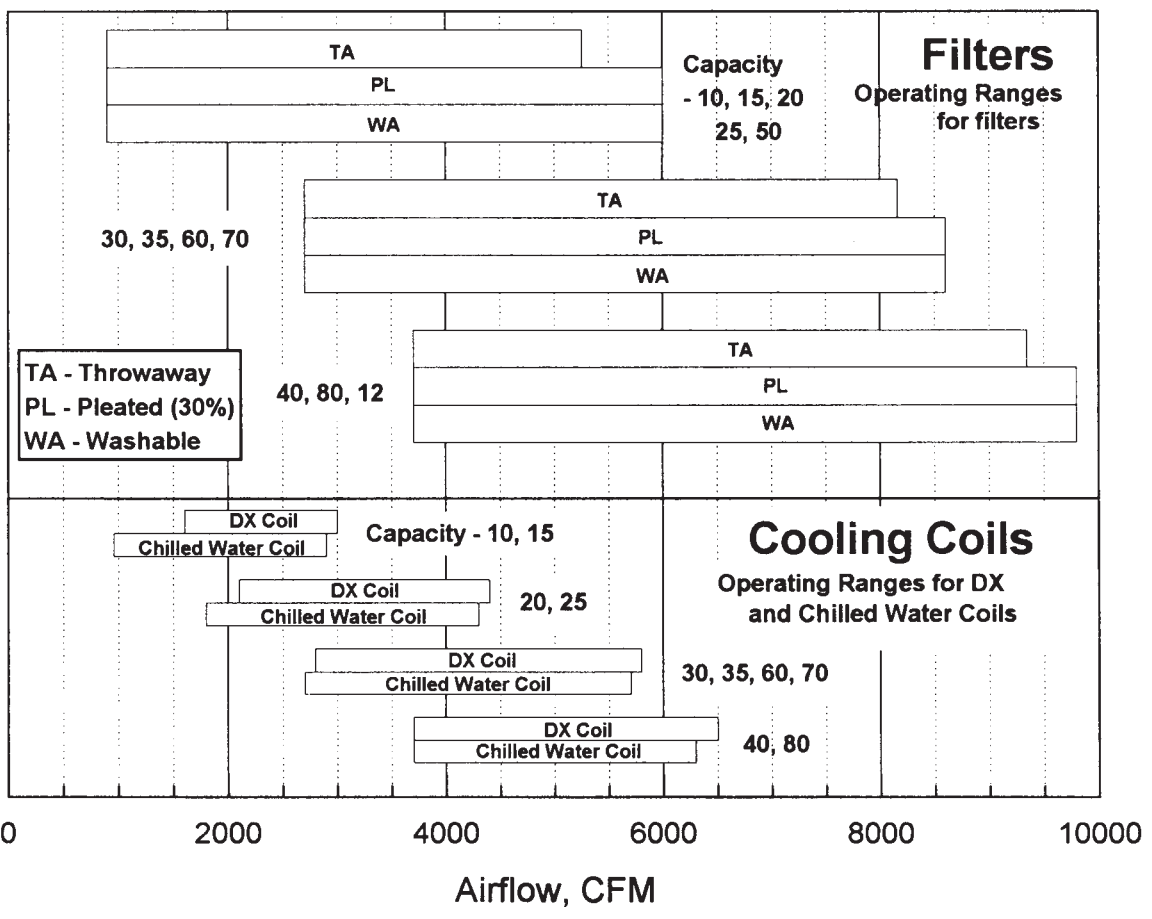
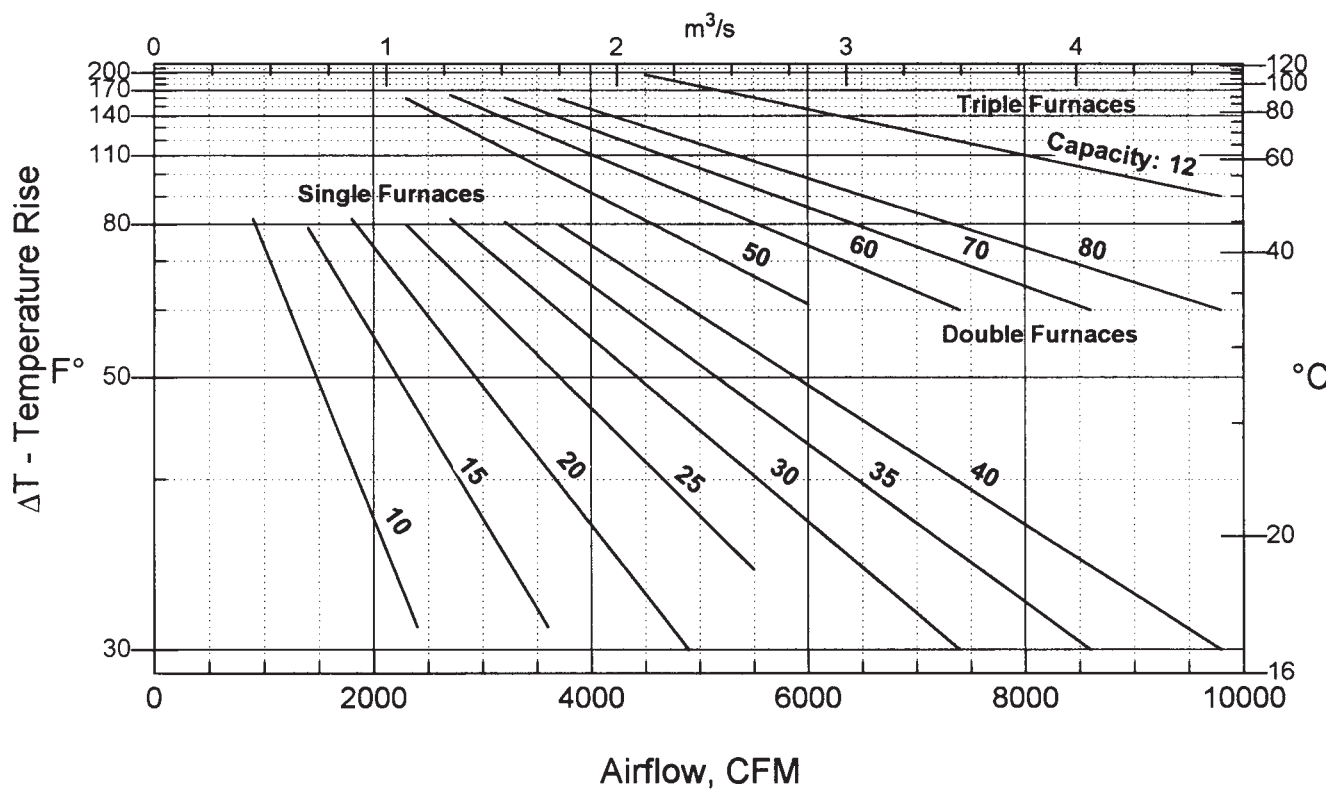
\*Capacities 10 and 15 are available only on Indoor Arrangement "K". Notes: Refer to Tables 10A & 10B for DX Cooling Coil and Tables 11A & 11B for Chilled Water Coil Pressure Losses (Indoor Arrangement "K").



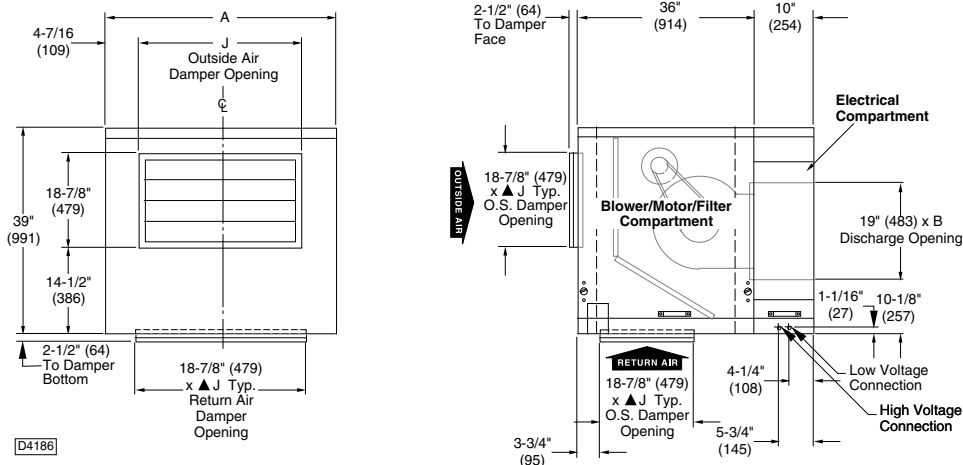
# Quick Sizer Chart No. 5

Furnace Type - (A,B) Standard Temperature Rise

Indoor Arrangement - (G,K)

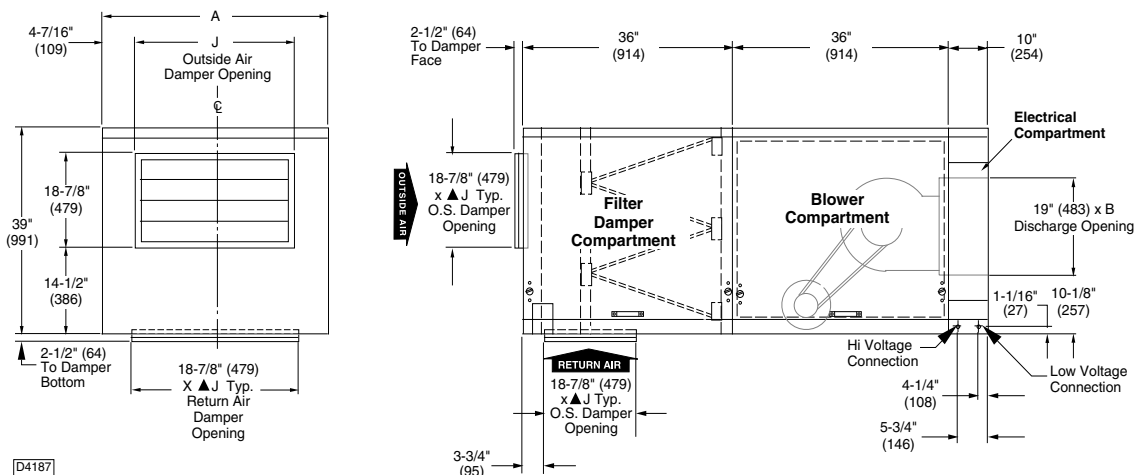


# Dimensional Data — Unit Modules



**Standard Blower Module†**  
 Indoor Arrangements [IA] B, D  
 Capacities [CA] 10 - 80 Unit Sizes  
 (Right hand service access shown)

Capacity	A	B	▲J
10/15*	32-7/8 (835)	15-9/16 (395)	24 (610)
20/25/50	43-7/8 (1114)	23-13/16 (605)	35 (889)
30/35 60/70	54-7/8 (1394)	34-13/16 (884)	46 (1168)
40/80/12	60-3/8 (1534)	45-13/16 (1164)	51-1/2 (1308)



(Indoor Arrangement "G" is shown)

**High CFM Blower Module\*†**  
 Indoor Arrangements [IA] G, K  
 Capacities [CA] 10 - 12

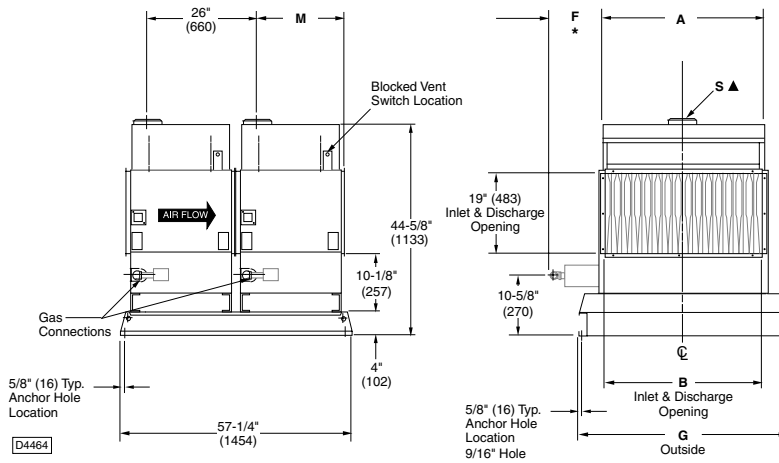
\*Capacities [CA] 10 & 15 apply to Indoor Arrangement "K" only; Indoor Arrangement "K" is similar to "G" with an additional 26" (660mm) Coil Cabinet between Filter and Blower Compartments (unit widths are the same).

Dimensions are in inches (Dimensions in Parenthesis are in millimeters)

†The dimensions shown on these modules do not include the base/skid rails.



# Dimensional Data — MU/ME Arrangements



Unit Type [UT] “MU”, Capacities [CA] 50 - 80, Indoor Arrangement [IA] “A”

**Table 6 - Dimensional Data**

CAPACITY	A	B	*F	G	M	S▲	V Dia.**
50	31- 5/8 (803)	29- 5/16 (745)	37- 5/8 (956)	41- 1/8 (1045)	20- 1/4 (514)	8 R (203)	5 (127)
60	37- 1/8 (943)	34- 13/16 (884)	43- 1/8 (1095)	52- 1/8 (1324)	20- 1/4 (514)	10 OV (254)	6 (152)
70	42- 5/8 (1083)	40- 5/16 (1024)	48- 5/8 (1235)	52- 1/8 (1324)	20- 1/4 (514)	10 OV (254)	6 (152)
80	48- 1/8 (1222)	45- 13/16 (1164)	54- 1/8 (1375)	57- 5/8 (1464)	21- 1/4 (540)	12 OV (305)	6 (152)

**NOTES:**

Dimensions are in inches (Dimensions in parenthesis are in millimeters)

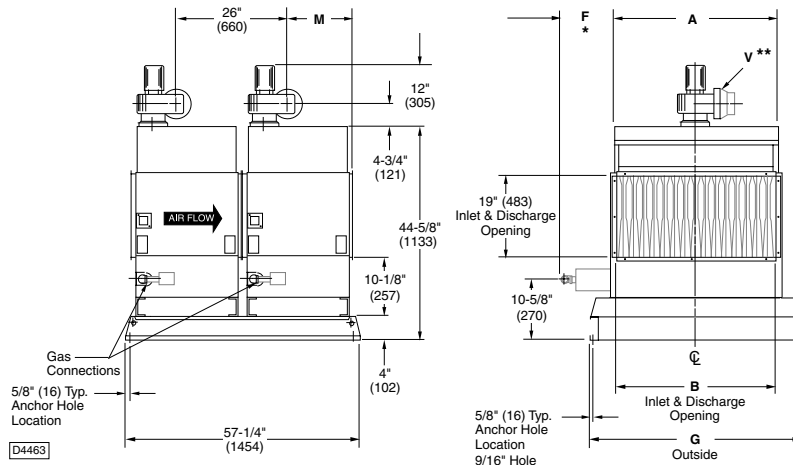
\* “F” Dimension is the recommended clearance to service the burner drawer.

▲ “S” Dimension (MU Natural Vent Units Only) Legend: R = Round; OV = Oval

\*\* “V” Dia. = Flue Opening (ME - Power Vent Units Only).

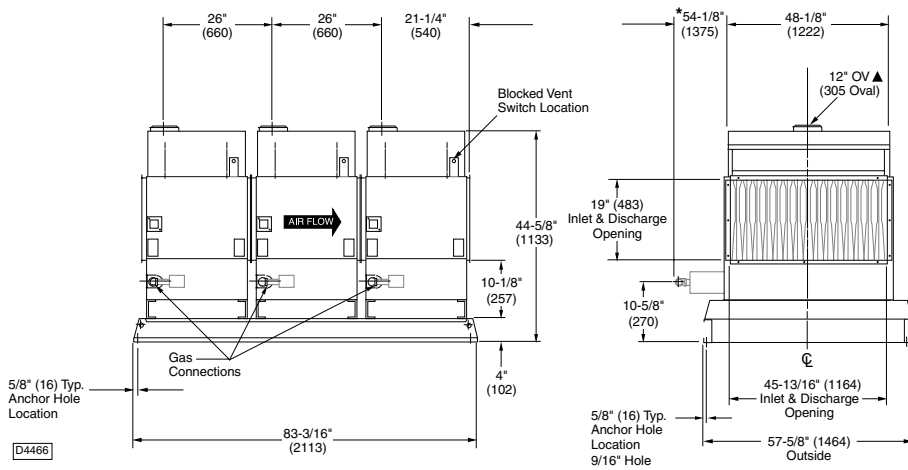
Gas Inlet sizes: Natural Gas = 3/4" Dia.

LP Gas = 1/2" or 3/4" Dia.



Unit Type [UT] “ME”, Capacities [CA] 50 - 80, Indoor Arrangement [IA] “A”

# Dimensional Data — MU/ME Arrangements



Unit Type [UT] "MU", Capacities [CA] 12, Indoor Arrangement [IA] "A"

**NOTES:**

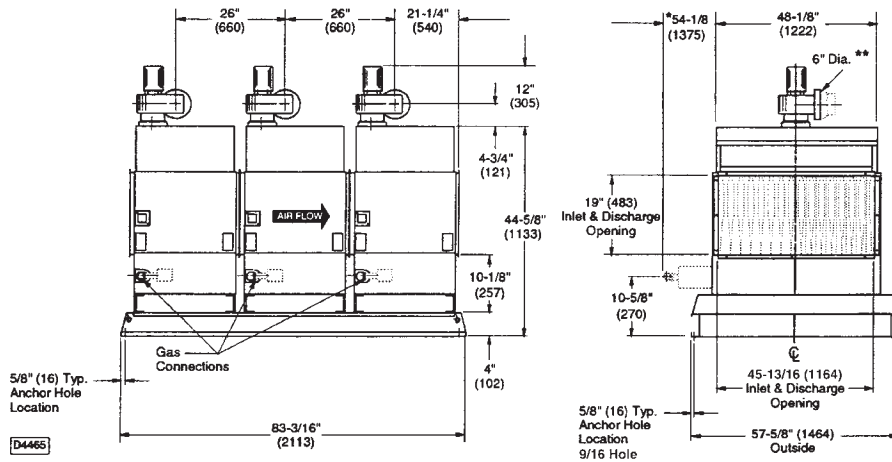
Dimensions are in inches (Dimensions in parenthesis are in millimeters)

\* Recommended clearance to service the burner drawer.

▲ Flue opening is 12" Oval (305)

Gas Inlet sizes: Natural Gas = 3/4" Dia..

LP Gas = 1/2" or 3/4" Dia.



Unit Type [UT] "ME", Capacities [CA] 12, Indoor Arrangement [IA] "A"

**NOTES:**

Dimensions are in inches (Dimensions in parenthesis are in millimeters)

\* Recommended clearance to service the burner drawer.

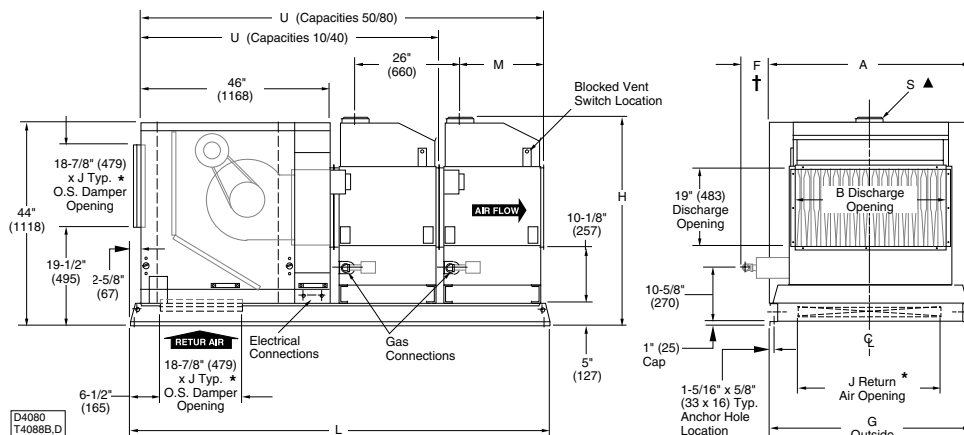
\*\*6" Dia. = Flue Opening - The 5" to 6" increaser adaptor is supplied by the manufacturer for this model.

Gas Inlet sizes: Natural Gas = 3/4" Dia..

LP Gas = 1/2" or 3/4" Dia.



# Dimensional Data — MU/ME Arrangements



Unit Type [UT] “MU”, Capacities [CA] 10 - 80, Indoor Arrangement [IA] “B”  
(Capacities [CA] 50-80 shown)

**Table 7 - Dimensional Data**

(#T4088-B, D)

CAPACITY	A	B	F†	G	H	J	L	M	S▲	U	V Dia.**
10	32- 7/8 (835)	15- 9/16 (395)	16- 3/8 (416)	31- 1/16 (789)	40- 5/8 (1032)	24 (610)	77- 3/8 (1965)	21- 1/4 (540)	6 R (152)	73- 5/8 (1870)	4 (102)
15	32- 7/8 (835)	18- 5/16 (465)	20- 1/2 (521)	31- 1/16 (789)	45- 5/8 (1159)	24 (610)	77- 3/8 (1965)	20- 1/4 (514)	7 R (178)	73- 5/8 (1870)	4 (102)
20	43- 7/8 (1114)	23-13/16 (605)	23- 1/2 (597)	42- 1/16 (1068)	45- 5/8 (1159)	35 (889)	77- 3/8 (1965)	20- 1/4 (514)	8 R (203)	73- 5/8 (1870)	5 (127)
25	43- 7/8 (1114)	29- 5/16 (745)	31- 1/2 (800)	42- 1/16 (1068)	45- 5/8 (1159)	35 (889)	77- 3/8 (1965)	20- 1/4 (514)	8 R (203)	73- 5/8 (1870)	5 (127)
30	54- 7/8 (1394)	34-13/16 (884)	34- 1/4 (870)	53- 1/16 (1348)	45- 5/8 (1159)	46 (1168)	77- 3/8 (1965)	20- 1/4 (514)	10 OV (254)	73- 5/8 (1870)	6 (152)
35	54- 7/8 (1394)	40- 5/16 (1024)	42- 1/4 (1073)	53- 1/16 (1348)	45- 5/8 (1159)	46 (1168)	77- 3/8 (1965)	20- 1/4 (514)	10 OV (254)	73- 5/8 (1870)	6 (152)
40	60- 3/8 (1534)	45-13/16 (1164)	48 (1219)	58- 9/16 (1487)	45- 5/8 (1159)	51- 1/2 (1308)	77- 3/8 (1965)	21- 1/4 (540)	12 OV (305)	73- 5/8 (1870)	6 (152)
50	43- 7/8 (1114)	29- 5/16 (745)	31- 1/2 (800)	42- 1/16 (1068)	45- 5/8 (1159)	35 (889)	103- 3/8 (2626)	20- 1/4 (514)	8 R (203)	99- 5/8 (2530)	5 (127)
60	54- 7/8 (1394)	34-13/16 (884)	34- 1/4 (870)	53- 1/16 (1348)	45- 5/8 (1159)	46 (1168)	103- 3/8 (2626)	20- 1/4 (514)	10 OV (254)	99- 5/8 (2530)	6 (152)
70	54- 7/8 (1394)	40- 5/16 (1024)	42- 1/4 (1073)	53- 1/16 (1348)	45- 5/8 (1159)	46 (1168)	103- 3/8 (2626)	20- 1/4 (514)	10 OV (254)	99- 5/8 (2530)	6 (152)
80	60- 3/8 (1534)	45-13/16 (1164)	48 (1219)	58- 9/16 (1487)	45- 5/8 (1159)	51- 1/2 (1308)	103- 3/8 (2626)	21- 1/4 (540)	12 OV (305)	99- 5/8 (2530)	6 (152)

**NOTES:**

Dimensions are in inches (Dimensions in parenthesis are in millimeters)

\* These dimensions are outside damper measurements.

† “F” Dimension is the recommended clearance to service the burner drawer.

“J” is an outside dimension for return air dampers.

▲ “S” Dimension (MU Natural Vent Units Only) Legend: R = Round; OV = Oval

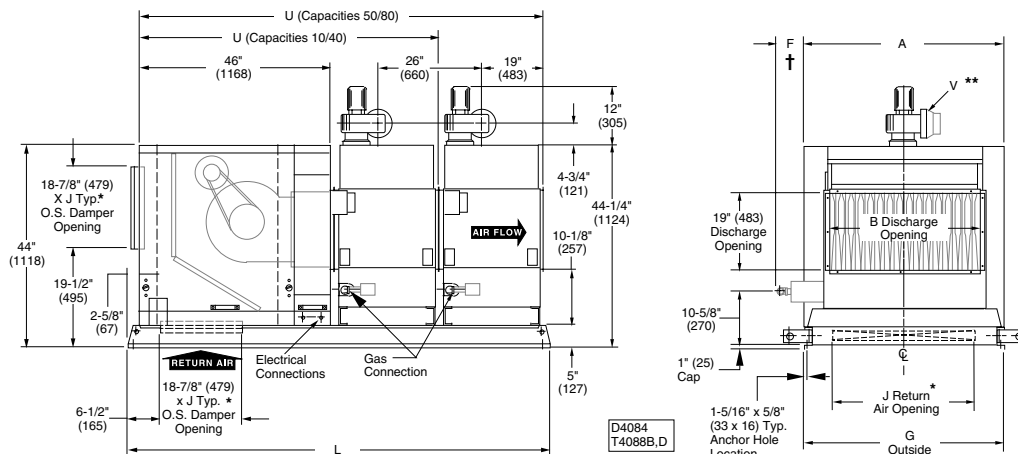
\*\*\* “V” Dia. = Flue Opening (ME - Power Vent Units Only); the 4” to 5” flue reducer adaptor is to be field supplied/installed for unit capacities 10 & 15. The 5” to 6” flue increaser adaptor is supplied by the manufacturer for unit capacities 30, 35, 40, 60, 70, & 80 (required for each furnace’s flue).

Gas Inlet sizes: Natural Gas: Capacities 10 thru 20 = 1/2”; Capacities 25 thru 80 = 3/4”.

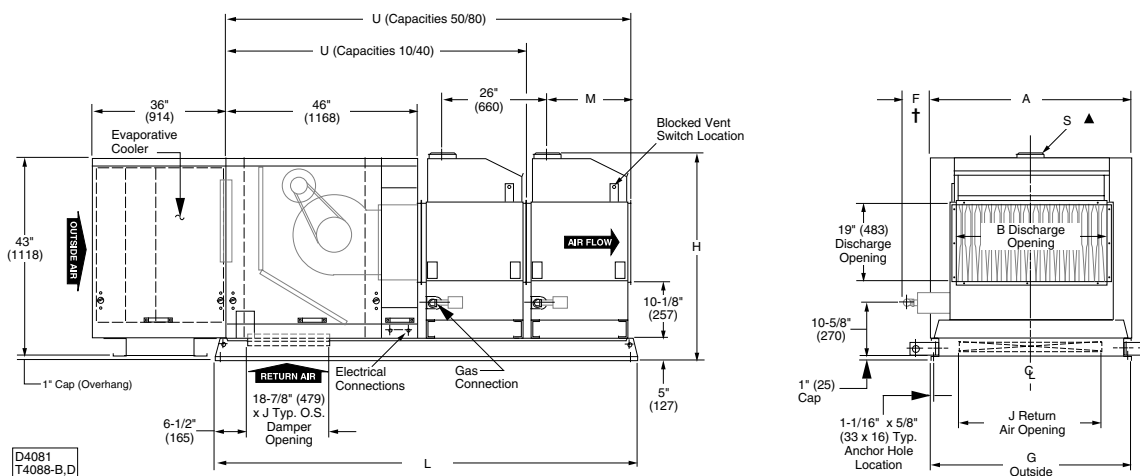
LP Gas: Capacities 10 thru 20 = 1/2”; Capacities 25 thru 80 = 1/2” or 3/4”.

All dimensional drawings for the “B” and “D” Indoor Arrangement are shown as Dual Furnace Unit Capacities (50/80). The dimensional data for Single Furnace Capacities (10/40) are tabulated in table 7 accordingly for all capacities.

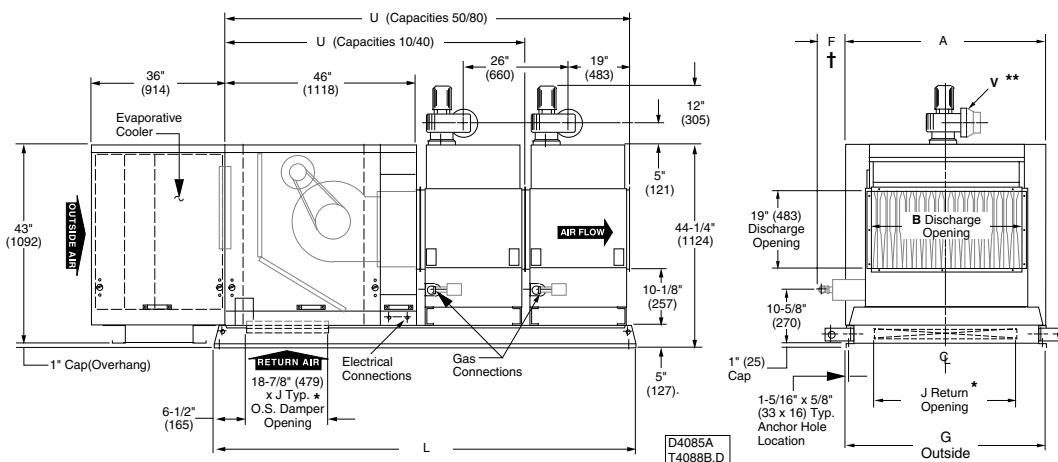
# Dimensional Data — MU/ME Arrangements



Unit Type [UT] "ME", Capacities [CA] 10 - 80, Indoor Arrangement [IA] "B"  
(Capacities [CA] 50-80 shown)



Unit Type [UT] "MU", Capacities [CA] 10 - 80, Indoor Arrangement [IA] "D"  
(Capacities [CA] 50-80 shown)

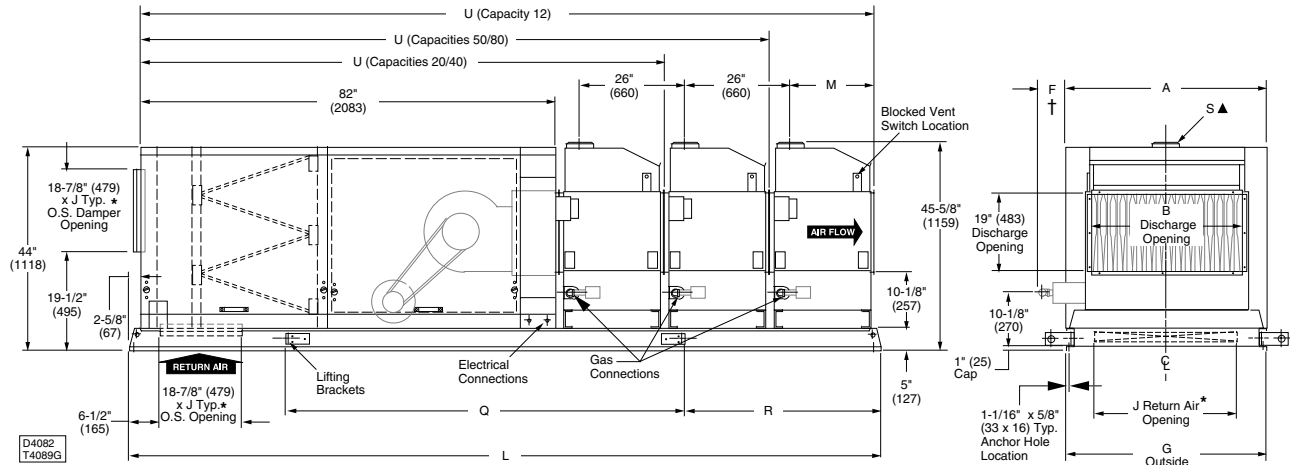


Unit Type [UT] "ME", Capacities [CA] 10 - 80, Indoor Arrangement [IA] "D"  
(Capacities [CA] 50-80 shown)

See page 20 for more dimensional information and specifications.



# Dimensional Data — MU/ME Arrangements



Unit Type [UT] “MU”, Capacities [CA] 20 - 12, Indoor Arrangement [IA] “G”  
(Capacity [CA] 12 shown)

**Table 8 - Dimensional Data**

(#T4088K/T4089G)

CAPACITY	A	B	F	G	H	J	L		M	Q	R	U S▲	U		V Dia.**
							[IA=G]	[IA=K]					[IA=G]	[IA=K]	
10	32- 7/8 (835)	15- 9/16 (395)	16- 3/8 (416)	31- 1/16 (789)	40- 5/8 (1032)	24 (610)	113- 1/2 (2883)	139- 1/2 (3543)	21- 1/4 (540)	60- 5/16 (1532)	26- 5/8 (676)	6 R (152)	108- 1/2 (26)	134- 1/2 (3416)	4 (102)
15	32- 7/8 (835)	18- 5/16 (465)	20- 1/2 (521)	31- 1/16 (789)	45- 5/8 (1159)	24 (610)	113- 1/2 (2883)	139- 1/2 (3543)	20- 1/4 (514)	60- 5/16 (1532)	26- 5/8 (676)	7 R (178)	108- 1/2 (26)	134- 1/2 (3416)	4 (102)
20	43- 7/8 (1114)	23-13/16 (605)	23- 1/2 (597)	42- 1/16 (1068)	45- 5/8 (1159)	35 (889)	113- 1/2 (2883)	139- 1/2 (3543)	20- 1/4 (514)	60- 5/16 (1532)	26- 5/8 (676)	8 R (203)	108- 1/2 (26)	134- 1/2 (3416)	5 (127)
25	43- 7/8 (1114)	29- 5/16 (745)	31- 1/2 (800)	42- 1/16 (1068)	45- 5/8 (1159)	35 (889)	113- 1/2 (2883)	139- 1/2 (3543)	20- 1/4 (514)	60- 5/16 (1532)	26- 5/8 (676)	8 R (203)	108- 1/2 (26)	134- 1/2 (3416)	5 (127)
30	54- 7/8 (1394)	34-13/16 (884)	34- 1/4 (870)	53- 1/16 (1348)	45- 5/8 (1159)	46 (1168)	113- 1/2 (2883)	139- 1/2 (3543)	20- 1/4 (514)	60- 5/16 (1532)	26- 5/8 (676)	10 OV (254)	108- 1/2 (26)	134- 1/2 (3416)	6 (152)
35	54- 7/8 (1394)	40- 5/16 (1024)	42- 1/4 (1073)	53- 1/16 (1348)	45- 5/8 (1159)	46 (1168)	113- 1/2 (2883)	139- 1/2 (3543)	20- 1/4 (514)	60- 5/16 (1532)	26- 5/8 (676)	10 OV (254)	108- 1/2 (26)	134- 1/2 (3416)	6 (152)
40	60- 3/8 (1534)	45-13/16 (1164)	48 (1219)	58- 9/16 (1487)	45- 5/8 (1159)	51- 1/2 (1308)	113- 1/2 (2883)	139- 1/2 (3543)	21- 1/4 (540)	60- 5/16 (1532)	26- 5/8 (676)	12 OV (305)	108- 1/2 (26)	134- 1/2 (3416)	6 (152)
50	43- 7/8 (1114)	29- 5/16 (745)	31- 1/2 (800)	42- 1/16 (1068)	45- 5/8 (1159)	35 (889)	139- 1/2 (3543)	165- 1/2 (4204)	20- 1/4 (514)	60-13/16 (1545)	35- 1/8 (892)	8 R (203)	134- 1/2 (24)	160- 1/2 (4077)	5 (127)
60	54- 7/8 (1394)	34-13/16 (884)	34- 1/4 (870)	53- 1/16 (1348)	45- 5/8 (1159)	46 (1168)	139- 1/2 (3543)	165- 1/2 (4204)	20- 1/4 (514)	60-13/16 (1545)	35- 1/8 (892)	10 OV (254)	134- 1/2 (24)	160- 1/2 (4077)	6 (152)
70	54- 7/8 (1394)	40- 5/16 (1024)	42- 1/4 (1073)	53- 1/16 (1348)	45- 5/8 (1159)	46 (1168)	139- 1/2 (3543)	165- 1/2 (4204)	20- 1/4 (514)	60-13/16 (1545)	35- 1/8 (892)	10 OV (254)	134- 1/2 (24)	160- 1/2 (4077)	6 (152)
80	60- 3/8 (1534)	45-13/16 (1164)	48 (1219)	58- 9/16 (1487)	45- 5/8 (1159)	51- 1/2 (1308)	139- 1/2 (3543)	165- 1/2 (4204)	21- 1/4 (540)	60-13/16 (1545)	35- 1/8 (892)	12 OV (305)	134- 1/2 (24)	160- 1/2 (4077)	6 (152)
12	60- 3/8 (1534)	45-13/16 (1164)	48 (1219)	58- 9/16 (1487)	45- 5/8 (1159)	51- 1/2 (1308)	165- 1/2 (4204)	N/A	21- 1/4 (540)	86- 1/8 (2188)	35- 1/8 (892)	12 OV (305)	160- 1/2 (186)	N/A	6 (152)

**NOTES:**

The dimensional data is tabulated for single and dual furnace capacities accordingly.

Using table 8 (#T4088K/T4089G), Capacities 10 & 15 apply only to Arrangement “K”; Capacity 12 applies only to Arrangement “G”.

Dimensions are in inches (Dimensions in parenthesis are in millimeters).

\* These dimensions are outside damper measurements.

† “F” Dimension is the recommended clearance to service the burner drawer.

“J” is an outside dimension for return air dampers.

▲ “S” Dimension (MU Natural Vent Units Only) Legend: R = Round; OV = Oval

\*\* “V” Dia. =Flue Opening (ME - Power Vent Units Only); the 4” to 5” flue reducer adaptor is to be field installed for unit capacities 10 & 15.

The 5” to 6” flue increaser adaptor is supplied by the manufacturer for unit capacities 30, 35, 40, 60, 70, 80 & 12 (required for each furnace’s flue).

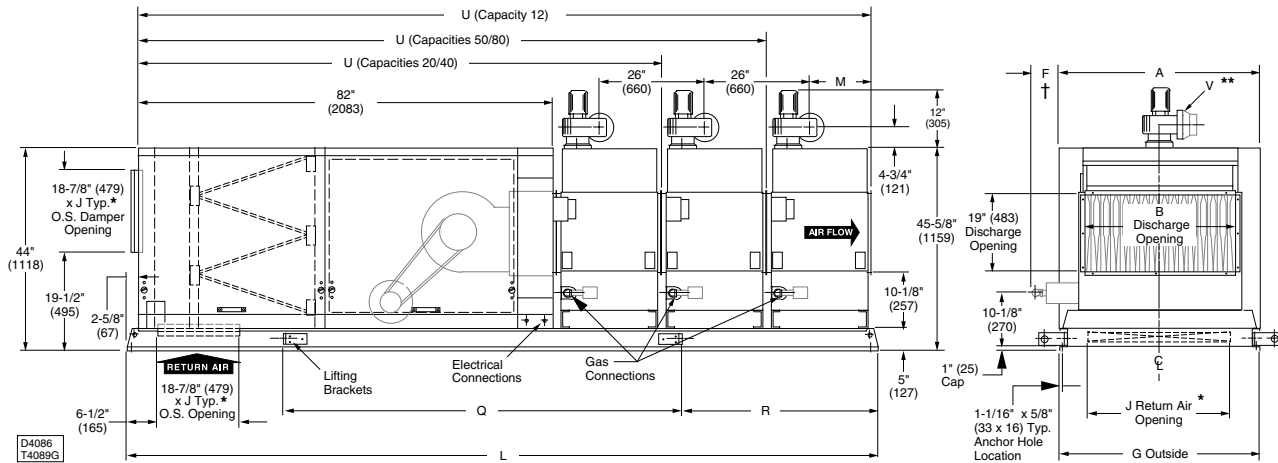
Gas Inlet sizes: Natural Gas: Capacities 10 thru 20 = 1/2”; Capacities 25 thru 12 = 3/4”.

LP Gas: Capacities 10 thru 20 = 1/2”; Capacities 25 thru 12 = 1/2” or 3/4”.

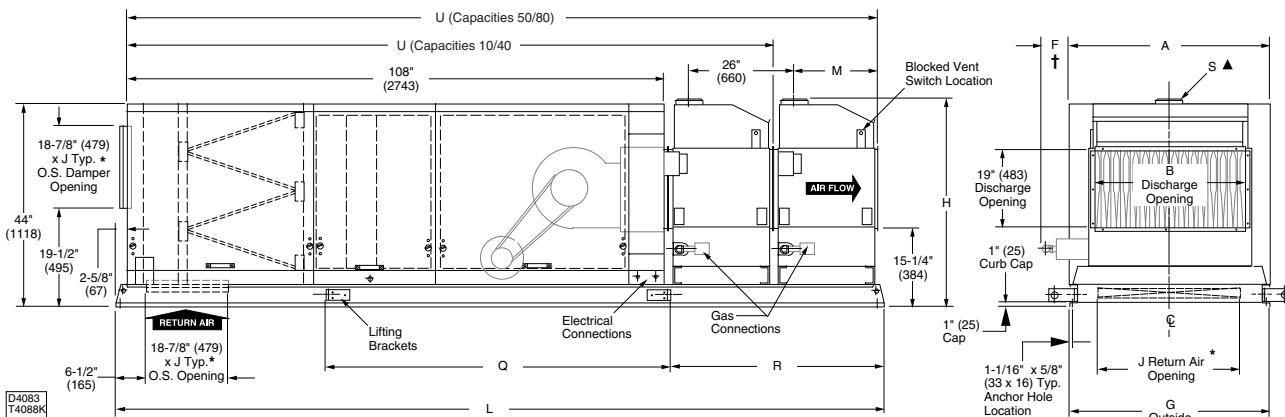


# Dimensional Data — MU/ME Arrangements

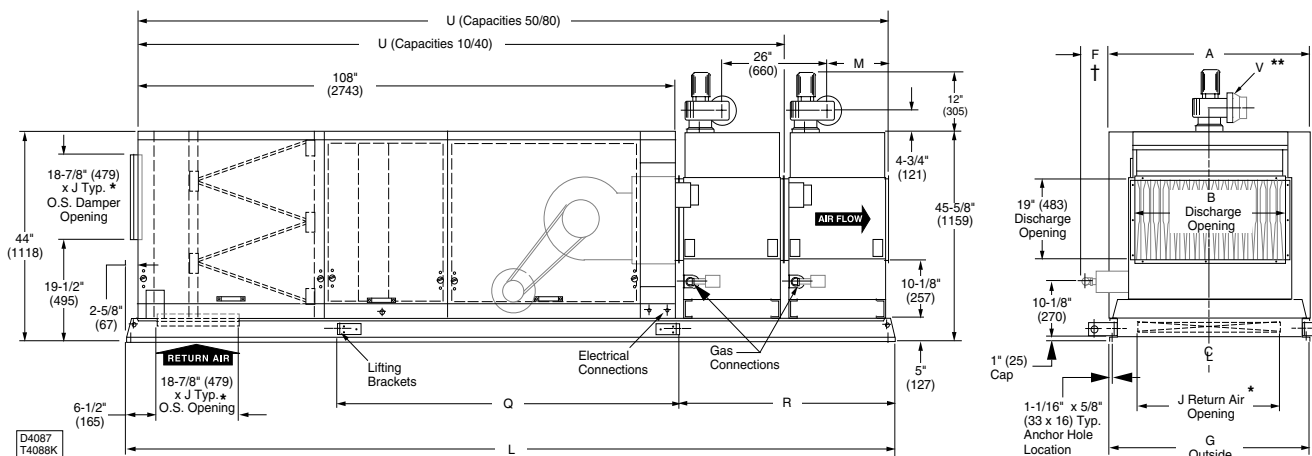
ARRANGEMENTS



Unit Type [UT] "ME", Capacities [CA] 20 - 12, Indoor Arrangement [IA] "G"  
(Capacity [CA] 12 shown)



Unit Type [UT] "MU", Capacities [CA] 10 - 80, Indoor Arrangement [IA] "K"  
(Capacities [CA] 50-80 shown)

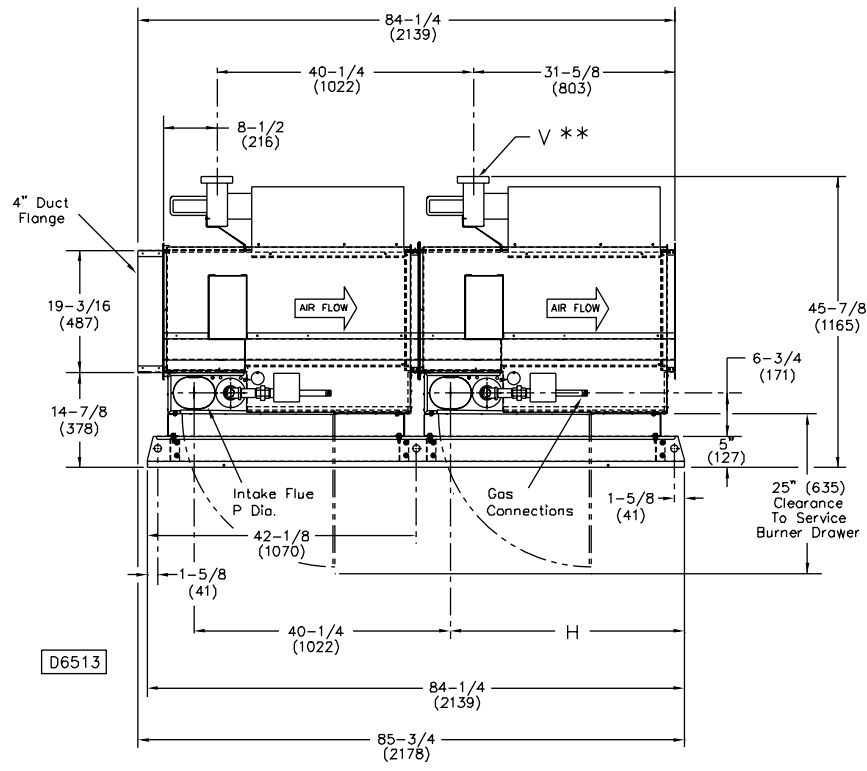


Unit Type [UT] "ME", Capacities [CA] 10 - 80, Indoor Arrangement [IA] "K"  
(Capacities [CA] 50-80 shown)

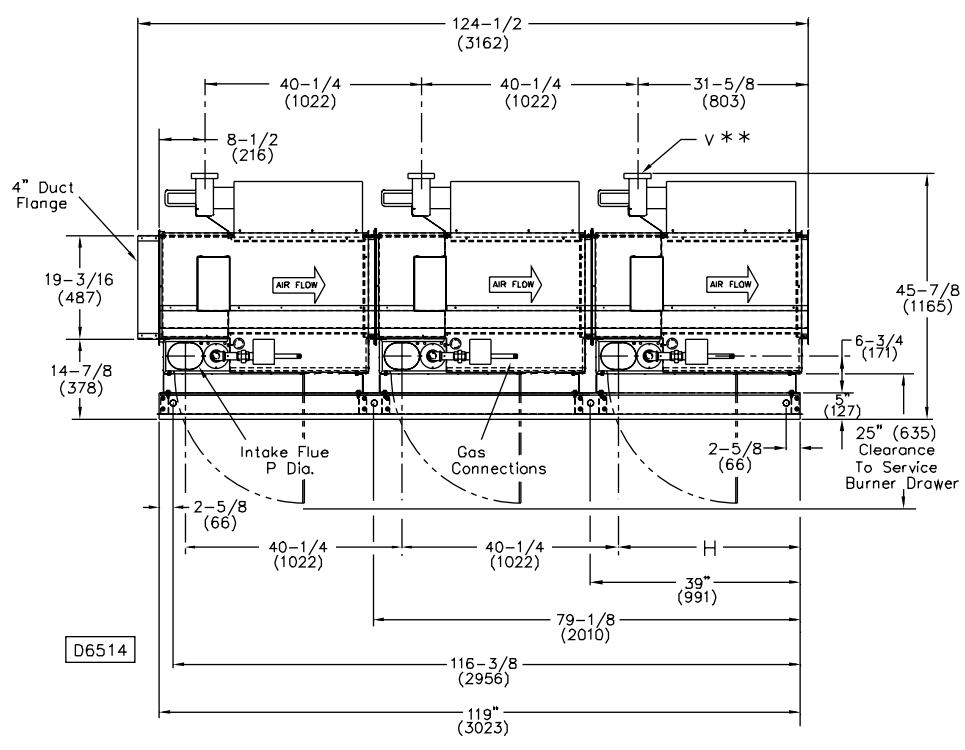
See page 22 for more dimensional information and specifications.



# Dimensional Data — MS Arrangements

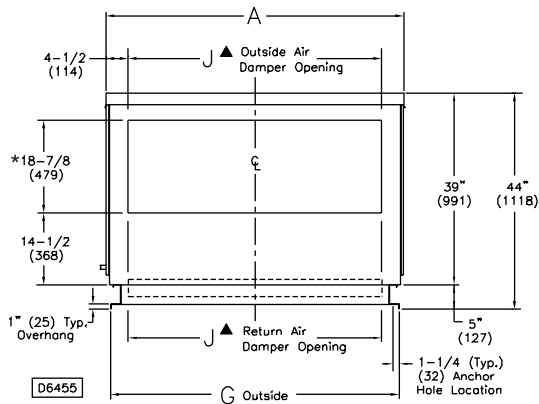


Unit Type [UT] "MS", Capacities [CA] 50 - 80, Indoor Arrangement [IA] "A"

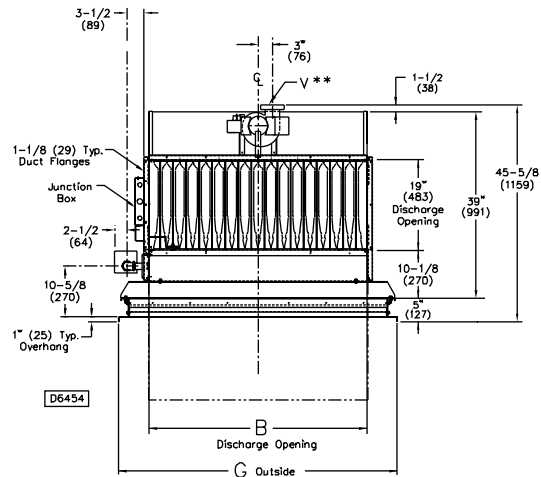


Unit Type [UT] "MS", Capacities [CA] 12, Indoor Arrangement [IA] "A"

# Dimensional Data — MS Arrangements



Intake Air End View  
Not applicable to [IA]-A or D  
(See Evaporative Cooling specifications)



Discharge End View

Table 9 - Dimensional Data

CAPACITY	A	B	C	D	G	H	J▲	L	P***	U	V Dia.**	Gas Inlet	
												NAT	LP
10	32- 7/8 (835)	15- 9/16 (395)	16- 7/16 (418)	19- 3/8 (492)	30- 3/16 (767)	37- 7/16 (951)	24 (610)	N/A	4 RD (102)	N/A	4 (102)	1/2	1/2
15	32- 7/8 (835)	18- 5/16 (465)	16- 7/8 (418)	19- 3/8 (492)	30- 3/16 (767)	37- 7/16 (951)	24 (610)	N/A	4 RD (102)	N/A	4 (102)	1/2	1/2
20	43- 7/8 (1114)	23- 13/16 (605)	21- 15/16 (557)	24- 7/8 (632)	41- 3/16 (1046)	37- 7/16 (951)	35 (889)	N/A	5 RD (127)	N/A	5 (127)	1/2	1/2
25	43- 7/8 (1114)	29- 5/16 (745)	21- 15/16 (557)	24- 7/8 (632)	41- 3/16 (1046)	37- 7/16 (951)	35 (889)	N/A	5 RD (127)	N/A	5 (127)	3/4	1/2 OR 3/4
30	54- 7/8 (1394)	34- 13/16 (884)	27- 7/16 (697)	30- 3/8 (772)	52- 3/16 (1326)	36- 11/16 (932)	46 (1168)	N/A	6 OV (152)	N/A	6 (152)	3/4	1/2 OR 3/4
35	54- 7/8 (1394)	40- 5/16 (1024)	27- 7/16 (697)	30- 3/8 (772)	52- 3/16 (1326)	36- 11/16 (932)	46 (1168)	N/A	6 OV (152)	N/A	6 (152)	3/4	1/2 OR 3/4
40	60- 3/8 (1534)	45- 13/16 (1164)	30- 3/16 (767)	33- 1/8 (841)	57- 11/16 (1465)	36- 11/16 (932)	51- 1/2 (1308)	N/A	6 OV (152)	N/A	6 (152)	3/4	1/2 OR 3/4
50	43- 7/8 (1114)	29- 5/16 (745)	21- 15/16 (557)	24- 7/8 (632)	42- 1/16 (1068)	37- 7/16 (951)	35 (889)	N/A	5 RD (127)	N/A	5 (127)	3/4	1/2 OR 3/4
60	54- 7/8 (1394)	34- 13/16 (884)	27- 7/16 (697)	30- 3/8 (772)	53- 1/16 (1348)	36- 11/16 (932)	46 (1168)	N/A	6 OV (152)	N/A	6 (152)	3/4	1/2 OR 3/4
70	54- 7/8 (1394)	40- 5/16 (1024)	27- 7/16 (697)	30- 3/8 (772)	53- 1/16 (1348)	36- 11/16 (932)	46 (1168)	N/A	6 OV (152)	N/A	6 (152)	3/4	1/2 OR 3/4
80	60- 3/8 (1534)	45- 13/16 (1164)	30- 3/16 (767)	33- 1/8 (841)	58- 9/16 (1487)	36- 11/16 (932)	51- 1/2 (1308)	181- 1/4 (4604)	6 OV (152)	177 (4495)	6 (152)	3/4	1/2 OR 3/4
12	60- 3/8 (1534)	45-13/16 (1164)	30- 3/16 (767)	33- 1/8 (841)	58- 9/16 (1487)	36- 11/16 (932)	51- 1/2 (1308)	218- 1/4 (5544)	6 OV (152)	217 (5512)	6 (152)	3/4	1/2 OR 3/4

NOTES:

Unless otherwise noted the end views and dimensional data shown in the drawings and table are applicable to Indoor Arrangement [IA]-B, D, G, K.

Dimensions are in inches (Dimensions in parenthesis are in millimeters)

"J"▲ Dimension is an outside dimension for the return air damper.

\* This is an outside damper dimension.

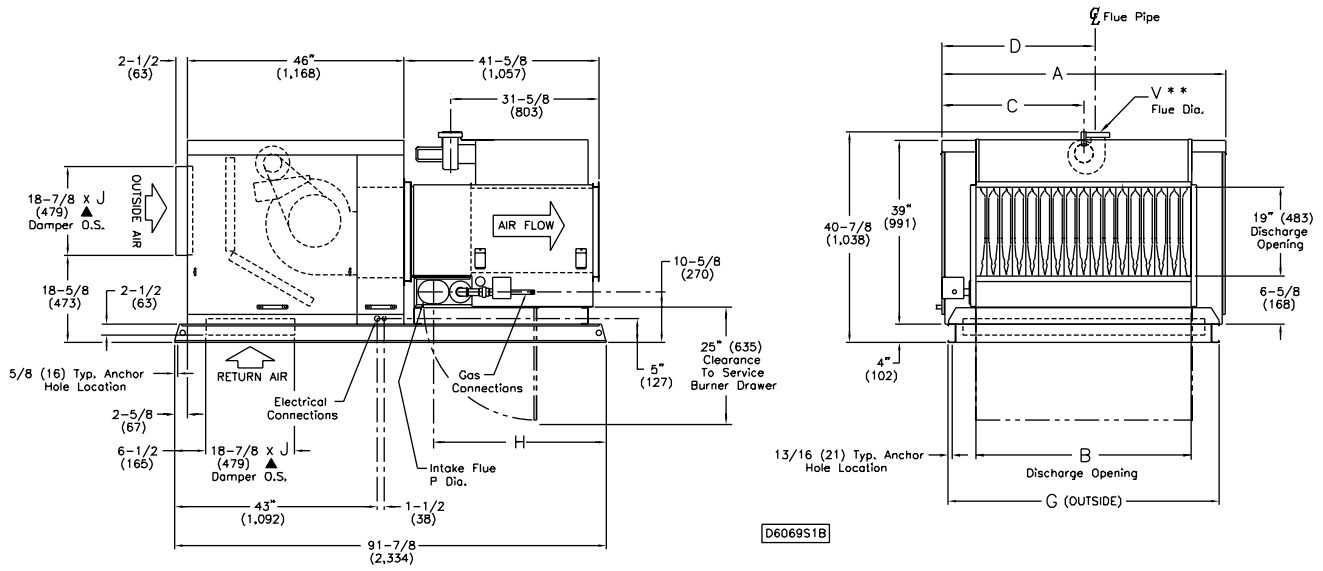
\*\*\*V" Dia. = Flue Opening: the 4" to 5" reducer adaptor is to be installed for unit capacities 10 & 15.

The 5" to 6" increaser adaptor is supplied by the manufacturer for unit capacities 30, 35, 40, 60, 70, 80 & 12 (required for each furnace's flue).

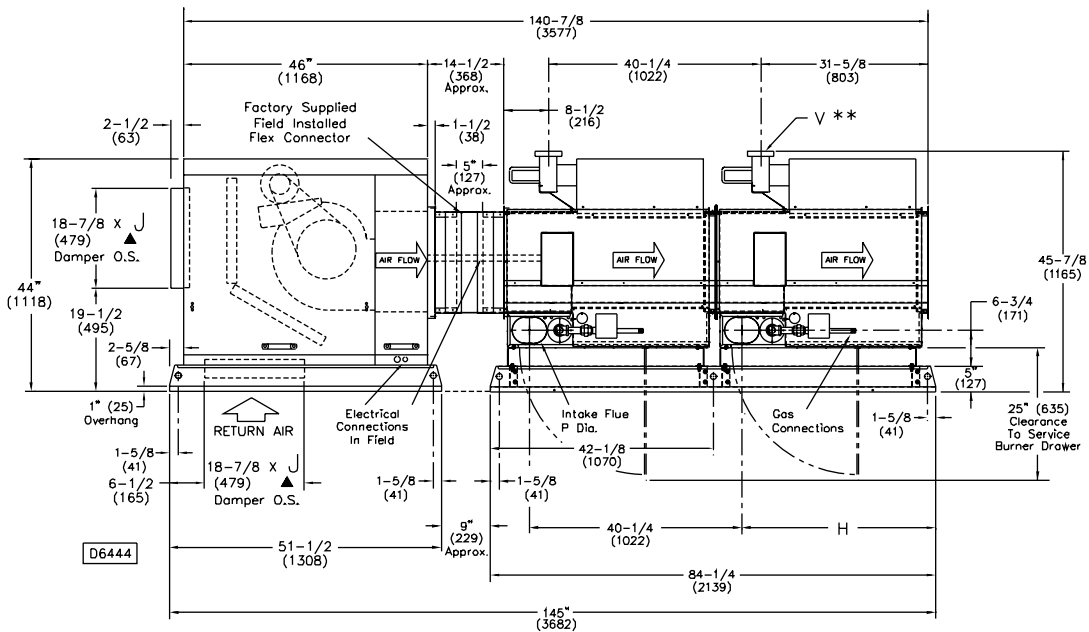
\*\*\*RD = Round; OV = Oval



# Dimensional Data — MS Arrangements

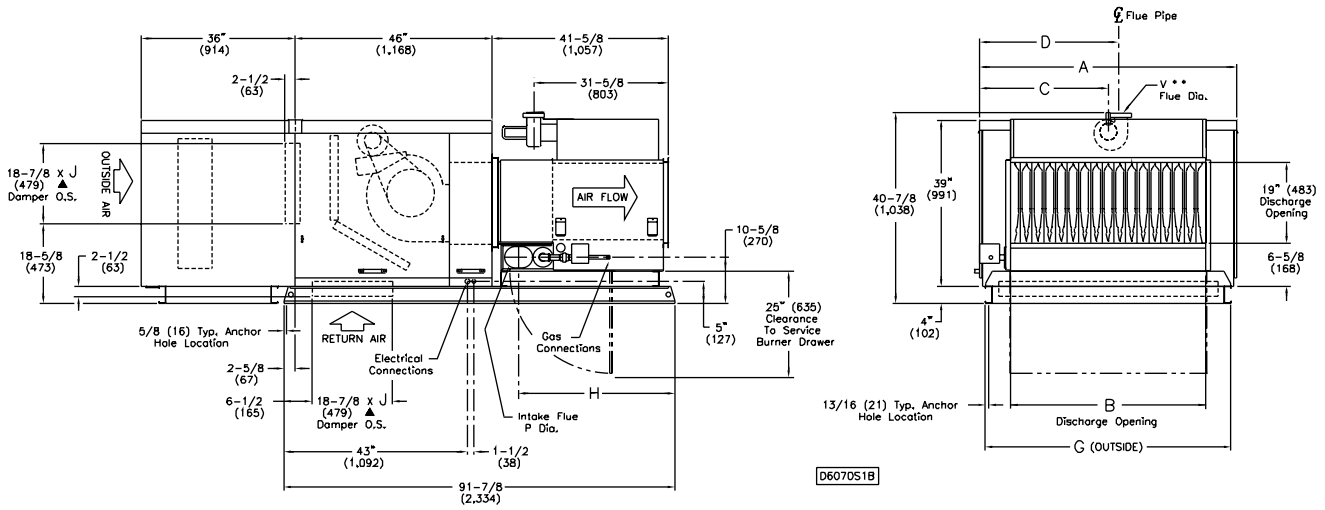


Unit Type [UT] "MS", Capacities [CA] 10-40, Indoor Arrangement [IA] "B"

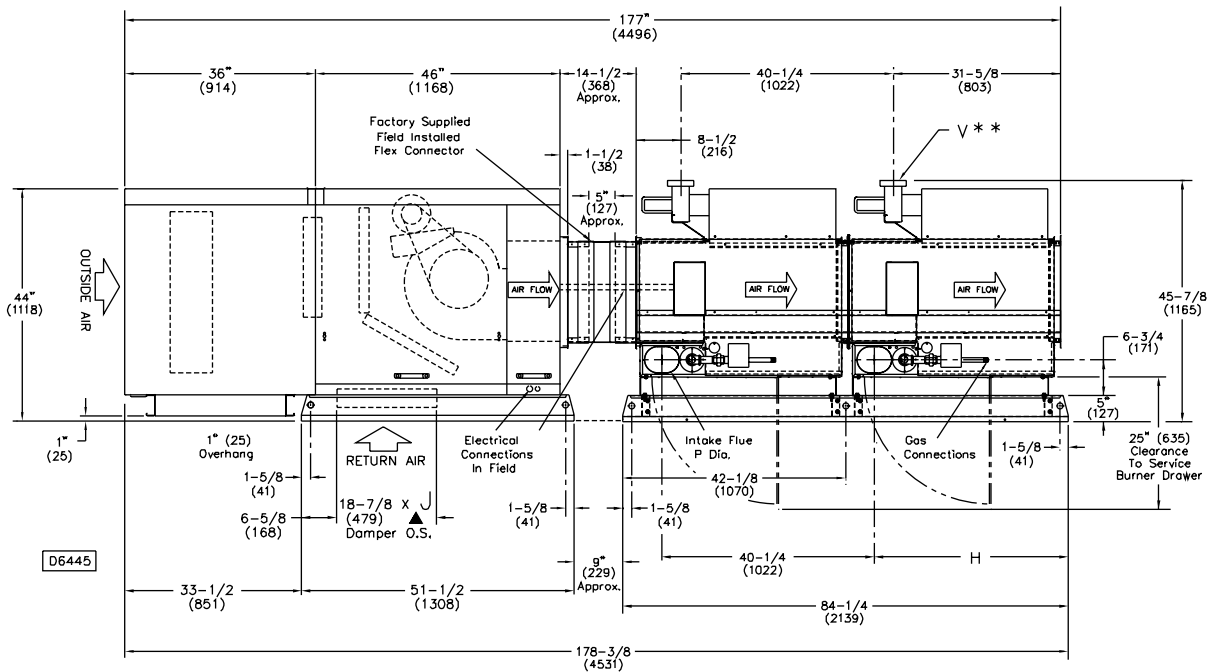


Unit Type [UT] "MS", Capacities [CA] 50-80, Indoor Arrangement [IA] "B"

# Dimensional Data — MS Arrangements

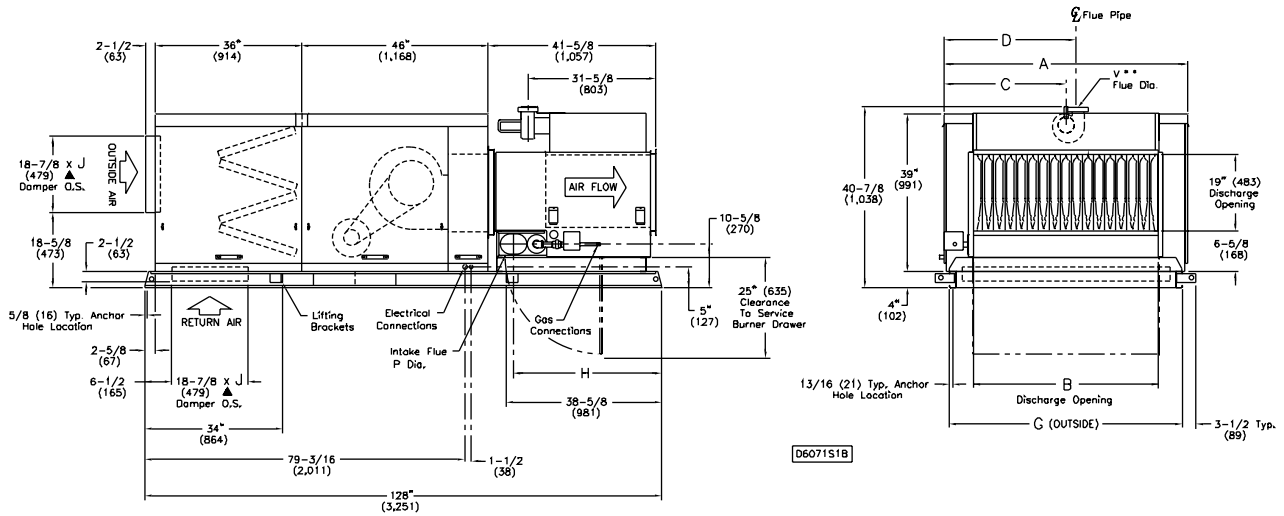


Unit Type [UT] “MS”, Capacities [CA] 10-40, Indoor Arrangement [IA] “D”

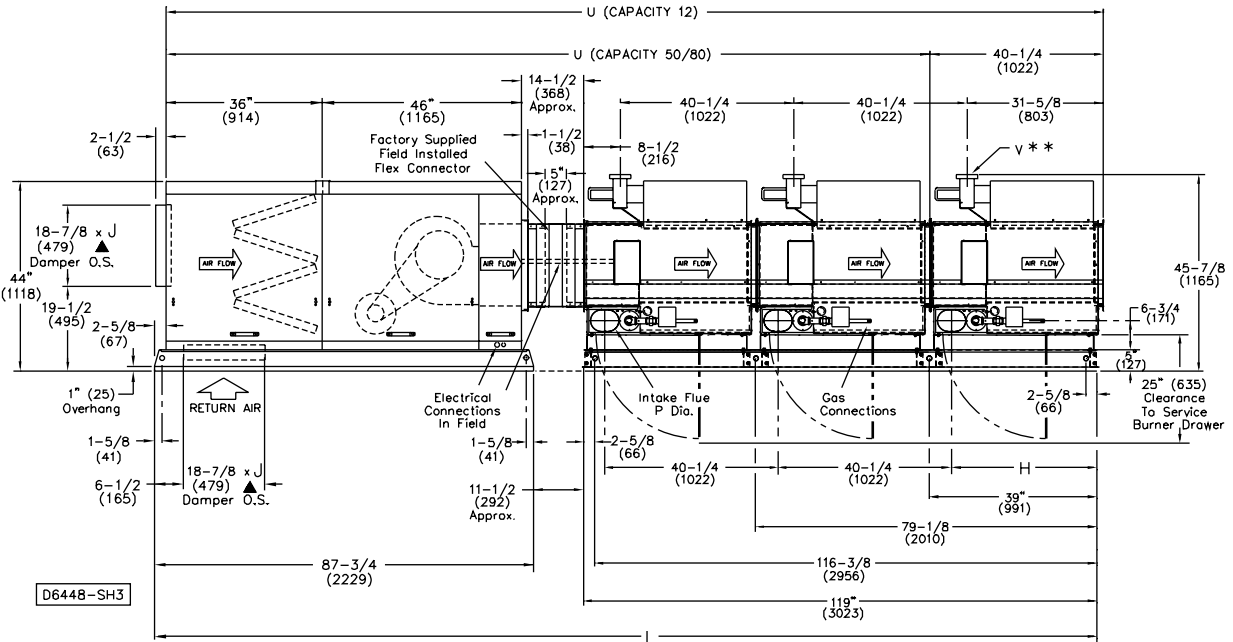


Unit Type [UT] “MS”, Capacities [CA] 50-80, Indoor Arrangement [IA] “D”

# Dimensional Data — MS Arrangements



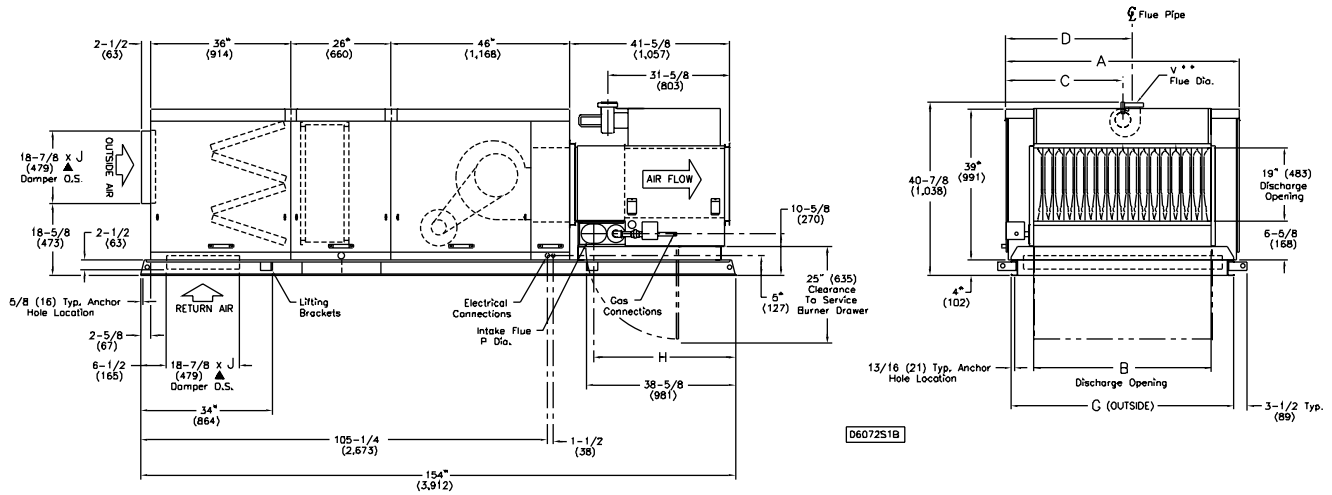
Unit Type [UT] "MS", Capacities [CA] 20-40, Indoor Arrangement [IA] "G"



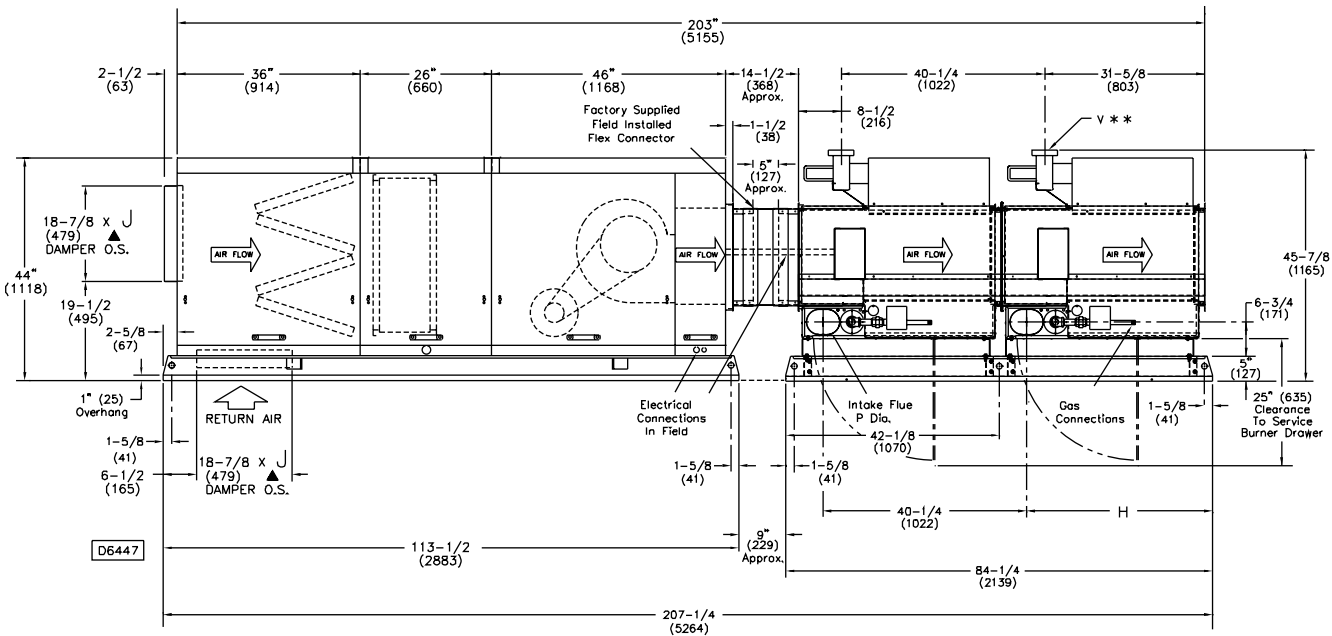
Unit Type [UT] "MS", Capacities [CA] 50-12, Indoor Arrangement [IA] "G"

(Capacity [CA] 12 shown)

# Dimensional Data — MS Arrangements



Unit Type [UT] "MS", Capacities [CA] 10-40, Indoor Arrangement [IA] "K"



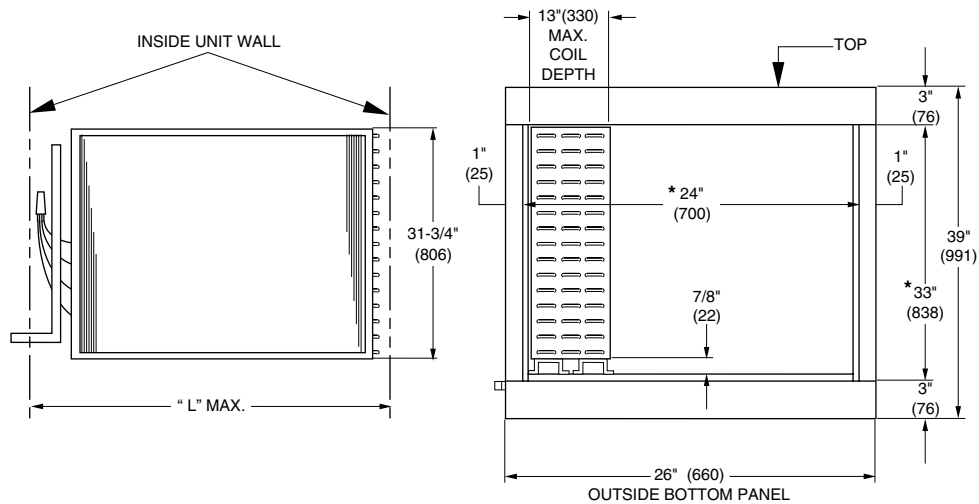
Unit Type [UT] "MS", Capacities [CA] 50-80, Indoor Arrangement [IA] "K"



# Dimensional Data — Unit Modules

## Coil Module

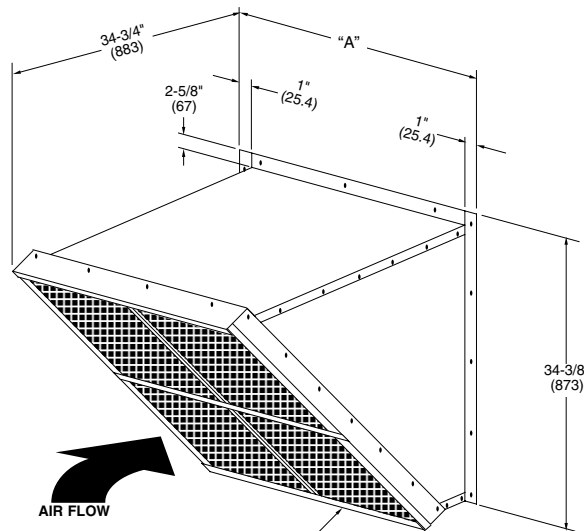
UNIT SIZE	"L" INSIDE MAX. CABINET OPENING
10/15	31-1/4" (794)
20/25/50	42-1/4" (1073)
30/35/60/70	53-1/4" (1353)
40/80	58-3/4" (1492)



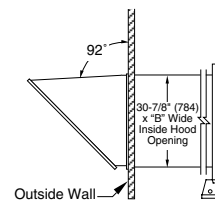
### Maximum Coil Dimensions

### Side Opening of Coil Module

NOTE: Dimensions are in inches (Dimensions in Parenthesis are in millimeters)



Model	"A" Dim.	"B" Dim.
10/15	31-1/2" (800)	29-1/4" (743)
20/25/50	42-1/2" (1080)	40-1/4" (1022)
30/35 60/70	53-1/2" (1359)	51-1/4" (1302)
40/80/12	59" (1499)	56-3/4" (1441)



The (optional) Outside Air Hood is Equipped With A Bird Inlet Screen. Optional Moisture Eliminators Are Also Available.

D4100

### Optional Air Intake Hood (shipped separately)



# Cooling Coil Options

## Indoor Arrangement [IA] - (K)

### Coil Options [CO] Model Digit 8

Sterling Indoor Make-Up Air Units are pleased to include coil cabinets and cooling coils to our Packaged Indoor set of features. As standard equipment, we offer 4 or 6 row, single or dual circuit intertwine, DX (20 tons max.) or chilled water coils. Sterling coil cabinets feature draw through design to ensure even air flow across the coil face and a one piece 409 stainless steel positive drain drip pan conforming to ASHRAE standard No. 62.1-2004. The drip pan is designed for side outlet drainage piping. Please refer to tables 10A, 10B, 11A and 11B for Cooling Coil Performance Data.

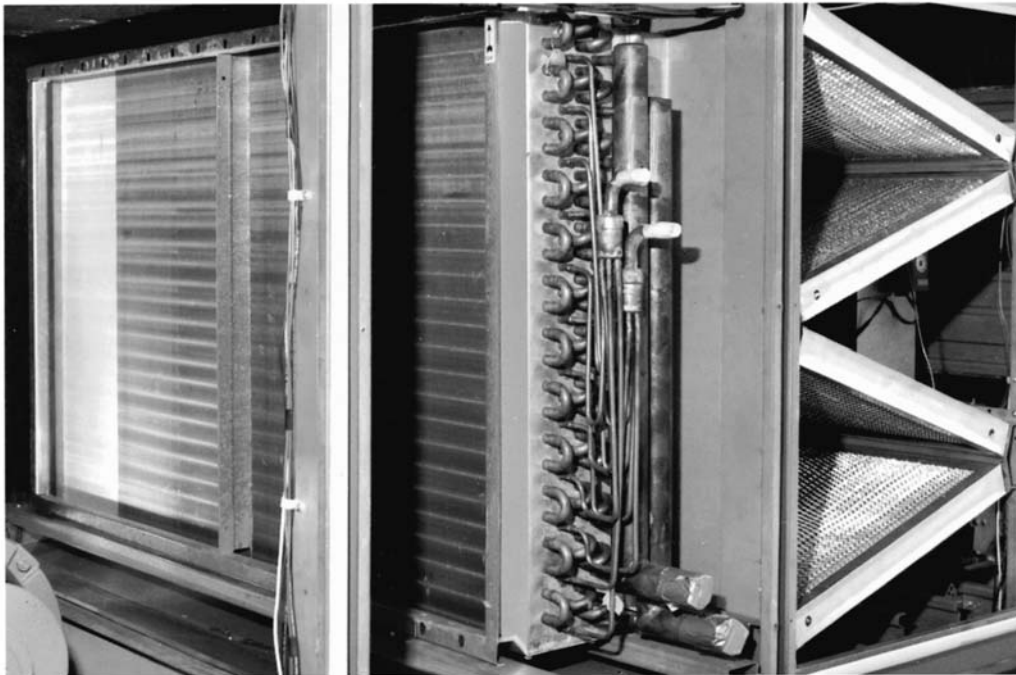
Whenever a Cooling Coil is used upstream of a furnace section(s), Sterling HIGHLY recommends a 409 stainless steel heat exchanger(s) be used.

**Indoor Arrangement (K) should not exceed 6,500 CFM (3.1 m<sup>3</sup>/s) or face velocities of 605 FPM (3.1 m/s).**

#### Coil Options [CO] Digit 8

- A** - DX Coil, 4 Row, Single Circuit
- B** - DX Coil, 4 Row, Dual Circuit
- C** - DX Coil, 6 Row, Single Circuit
- D** - DX Coil, 6 Row, Dual Circuit

- E** - Chilled Water Coil, 4 Row
- G** - Chilled Water Coil, 6 Row
- O** - None
- Z** - Other (Special)



# Cooling Coil Options (CO) — Table 10A

## Indoor Arrangement (K) - DX Cooling Coil Performance Data (Ref. R-22)

### 80°F Entering Dry Bulb, 67°F Entering Wet Bulb

Unit Capacity (CA)	Air Flow (SCFM)	Face Velocity (FPM)	Fin Spacing (FPF)	Capacity based on 80°F EDB, 67°F EWB, 45°F Sat. Suction, 100°F Liquid									
				NUMBER OF ROWS									
				4				Fin Spacing (FPF)		6			
				Capacity (MBH)	L.A.T. (DB / WB)	A.P.D. In.W.C.	WT. (LBS)	Capacity (MBH)	L.A.T. (DB / WB)	A.P.D. In.W.C.	WT. (LBS)		
10	1600	320	91	47	59 / 57	0.24	86.1	100	74	57 / 57	0.67	118.0	
		320	121	53	57 / 56	0.27	90.3						
		320	154	58	55 / 55	0.32	94.9						
	2400	480	97	62	60 / 58	0.45	87.0	135	83	56 / 55	0.80	125.4	
		480	126	70	58 / 57	0.52	91.0	166	89	55 / 55	0.98	131.9	
		480	160	77	57 / 56	0.63	95.8						
15	1600	320	91	47	59 / 57	0.24	86.1	97	84	59 / 58	0.92	117.4	
		320	121	53	57 / 56	0.27	90.3						
		320	154	58	55 / 55	0.32	94.9						
	3000	601	100	71	61 / 59	0.63	87.4	109	89	58 / 57	0.98	119.9	
		601	136	82	59 / 58	0.75	92.4	132	96	57 / 56	1.10	124.7	
		601	147	85	58 / 58	0.81	94.0						
20	2100	284	102	73	56 / 55	0.22	115.0	99	85	54 / 53	0.31	157.2	
		284	130	79	56 / 55	0.24	120.8						
		284	162	84	54 / 54	0.28	127.4						
	4400	596	104	106	61 / 59	0.63	115.3	102	143	57 / 56	0.97	158.1	
		596	133	120	59 / 58	0.73	121.3	130	156	55 / 55	1.11	166.8	
		596	148	126	58 / 58	0.80	124.4	149	163	55 / 55	1.23	172.7	
25, 50	2500	338	98	80	58 / 56	0.28	114.1	102	98	54 / 54	0.42	158.1	
		338	135	89	56 / 55	0.33	121.8						
		338	159	93	55 / 55	0.37	126.7						
	4400	596	104	106	61 / 59	0.63	115.3	102	143	57 / 56	0.97	158.1	
		596	133	120	59 / 58	0.73	121.3	130	156	55 / 55	1.11	166.8	
		596	148	126	58 / 58	0.80	124.4	149	163	55 / 55	1.23	172.7	
30, 60	2800	286	104	96	56 / 56	0.22	147.8	101	119	53 / 53	0.33	204.0	
		286	131	105	55 / 54	0.24	155.1						
		286	159	112	54 / 54	0.28	162.8						
	5800	593	100	148	60 / 59	0.63	146.7	100	178	58 / 57	0.93	203.4	
		593	129	167	59 / 57	0.73	154.6	131	199	56 / 56	1.09	216.1	
		593	151	178	58 / 57	0.83	160.6	151	211	55 / 55	1.25	224.5	
35, 70	3200	327	105	106	57 / 56	0.27	148.0	103	132	53 / 53	0.41	204.8	
		327	132	116	55 / 55	0.30	155.4						
		327	164	125	54 / 54	0.36	164.2						
	5800	593	98	147	61 / 59	0.63	146.1	100	178	58 / 57	0.93	203.4	
		593	129	167	59 / 57	0.73	154.6	131	199	56 / 56	1.09	216.1	
		593	151	178	58 / 57	0.83	160.6	151	211	55 / 55	1.25	224.5	
40, 80	3700	340	108	125	57 / 56	0.30	161.4	103	151	53 / 53	0.44	222.9	
		340	138	137	55 / 55	0.33	170.6						
		340	163	145	54 / 54	0.38	178.2						
	6500	599	100	168	60 / 58	0.65	159.0	109	212	57 / 56	1.02	225.6	
		599	127	186	59 / 58	0.74	167.2	135	232	55 / 55	1.14	237.3	
		599	150	198	58 / 57	0.84	174.2	150	241	55 / 55	1.25	244.1	

CONVERSIONS: 2119 SCFM = 1 m<sup>3</sup>/s, 196.8 FPM = 1 m/s, 3.412 MBH = 1 kW, (°F-32) 5/9= °C, 1 IN. W.C. = 248.8 Pa, 1 LB. = 0.453 kg.

NOTES: 1) Data certified in accordance with ARI Standard 410.

2) Capacity based on 80°F EDB, 67°F EWB, 45°F Sat. Suction, 100° F Liquid.

3) Weight listed is the total weight of the dry coil.

4) Consult customer service department for special coil requirements.

# Cooling Coil Options (CO) — Table 10B

## Indoor Arrangement (K) - DX Cooling Coil Performance Data (Ref. R-22) 95°F Entering Dry Bulb, 74°F Entering Wet Bulb

				Capacity based on 95°F EDB, 74°F EWB, 45°F Sat. Suction, 100°F Liquid								
				NUMBER OF ROWS								
Unit Capacity (CA)	Air Flow (SCFM)	Face Velocity (FPM)	Fin Spacing (FPF)	4				Fin Spacing (FPF)	6			
				Capacity (MBH)	L.A.T. (DB / WB)	A.P.D. (In.W.C.)	WT. (LBS)		Capacity (MBH)	L.A.T. (DB / WB)	A.P.D. (In.W.C.)	WT. (LBS)
10	1600	320	96	78	62 / 60	0.26	86.8	94	91	95 / 74	0.37	116.8
		320	125	86	59 / 58	0.29	90.9	132	101	55 / 55	0.43	124.7
		320	161	93	57 / 57	0.34	95.9	167	107	54 / 53	0.53	132.1
	2400	480	101	100	64 / 62	0.47	87.5	102	125	59 / 59	0.71	118.4
		480	139	107	62 / 61	0.54	92.7	135	138	57 / 57	0.83	125.4
		480	149	115	61 / 60	0.6	94.2	162	146	56 / 56	0.98	131.0
15	1600	320	96	78	62 / 60	0.26	86.8	101	93	57 / 57	0.38	118.2
		320	125	86	59 / 58	0.29	90.9	132	101	55 / 55	0.43	124.7
		320	161	93	57 / 57	0.34	95.9	160	106	54 / 54	0.50	130.6
	3000	601	101	111	66 / 63	0.65	87.5	99	143	61 / 60	0.96	117.8
		601	134	121	64 / 62	0.74	92.0	128	158	59 / 58	1.11	123.9
		601	149	128	63 / 62	0.82	94.2	147	166	58 / 58	1.23	127.9
20	2100	284	101	108	60 / 59	0.21	114.6	98	133	55 / 55	0.32	156.9
		284	126	118	58 / 57	0.24	119.8	134	144	53 / 53	0.37	168.0
		284	156	127	56 / 56	0.27	126.0	164	150	52 / 52	0.43	177.3
	4400	596	93	165	67 / 63	0.62	113.0	98	215	61 / 60	0.96	156.9
		596	134	195	63 / 61	0.75	121.5	134	234	59 / 58	1.12	167.8
		596	150	204	62 / 61	0.83	124.8	150	244	58 / 57	1.23	172.8
25, 50	2500	338	98	118	62 / 60	0.28	114.1	107	143	57 / 57	0.42	159.4
		338	129	135	59 / 58	0.32	120.4	136	154	56 / 55	0.48	168.4
		338	157	145	57 / 57	0.36	126.2	164	162	54 / 54	0.56	177.1
	4400	596	93	165	67 / 63	0.62	113.0	98	215	61 / 60	0.96	156.9
		596	134	195	63 / 61	0.75	121.5	134	234	59 / 58	1.12	167.8
		596	150	204	62 / 61	0.83	124.8	150	244	58 / 57	1.23	172.8
30, 60	2800	286	106	138	61 / 60	0.22	148.1	102	175	55 / 55	0.33	204.2
		286	137	153	58 / 58	0.25	156.5	122	187	54 / 53	0.36	212.6
		286	167	178	55 / 55	0.30	165.0	163	197	52 / 52	0.43	229.2
	5800	593	97	225	66 / 63	0.64	145.8	98	290	60 / 59	0.95	202.5
		593	138	254	63 / 61	0.75	156.8	132	326	58 / 57	1.13	216.5
		593	151	265	62 / 61	0.83	160.6	151	341	57 / 56	1.26	224.3
35, 70	3200	327	95	162	61 / 59	0.27	145.3	104	195	56 / 56	0.40	205.0
		327	130	181	58 / 57	0.31	154.9	139	212	54 / 54	0.47	219.4
		327	152	190	57 / 56	0.34	160.9	162	220	53 / 53	0.53	228.8
	5800	593	92	183	62 / 60	0.28	156.6	98	290	60 / 59	0.95	202.5
		593	135	198	59 / 58	0.32	169.4	132	326	58 / 57	1.13	216.5
		593	151	265	62 / 61	0.83	160.6	151	341	57 / 56	1.26	224.3
40, 80	3700	340	92	183	62 / 60	0.28	156.6	100	225	56 / 56	0.43	221.3
		340	135	198	59 / 58	0.32	169.4	134	245	54 / 54	0.49	236.8
		340	162	212	57 / 57	0.38	177.6	161	256	53 / 53	0.57	249.1
	6500	599	103	251	66 / 63	0.64	159.7	97	328	60 / 59	0.96	219.9
		599	134	287	63 / 61	0.75	169.1	132	367	58 / 57	1.14	235.9
		599	149	302	62 / 60	0.82	173.7	150	381	57 / 56	1.26	244.1

CONVERSIONS: 2119 SCFM = 1 m<sup>3</sup>/s, 196.8 FPM = 1 m/s, 3.412 MBH = 1 kW, (°F-32) 5/9= °C, 1 IN. W.C. = 248.8 Pa, 1 LB. = 0.453 kg.

NOTES: 1) Data certified in accordance with ARI Standard 410.

2) Capacity based on 95°F EDB, 74°F EWB, 45°F Sat. Suction, 100° F Liquid.

3) Weight listed is the total weight of the dry coil.

4) Consult customer service department for special coil requirements.



# Cooling Coil Options (CO) — Table 11A

## Indoor Arrangement (K) - Chilled Water Cooling Coil Performance Data 80°F Entering Dry Bulb, 67°F Entering Wet Bulb

Capacity based on 80°F EDB, 67°F EWB, 45°F EWT, 70 GPM												
Unit Capacity (CA)	Air Flow (SCFM)	Face Velocity (FPM)	Fin Spacing (FPF)	NUMBER OF ROWS								
				4				Fin Spacing	6			
				Capacity (MBH)	L.A.T. (DB / WB)	A.P.D. In.W.C.	WT. (LBS)	(FPF)	Capacity (MBH)	L.A.T. (DB / WB)	A.P.D. In.W.C.	WT. (LBS)
10	1000	200	84	46	52 / 51	0.10	63.5	84	54	48 / 48	0.15	85.9
		200	93	48	51 / 50	0.10	64.8	97	56	47 / 47	0.17	88.6
		200	97	50	50 / 49	0.11	66.8	120	58	46 / 46	0.19	93.4
	2400	480	84	80	58 / 56	0.41	63.5	85	102	53 / 53	0.62	86.1
		480	112	90	56 / 54	0.48	67.4	116	112	51 / 51	0.73	92.6
		480	152	100	53 / 53	0.59	73.0	157	121	50 / 49	0.91	101.2
15	1400	280	88	60	54 / 52	0.18	64.1	84	70	50 / 49	0.26	85.9
		280	130	68	51 / 50	0.22	70.0	100	74	49 / 49	0.30	89.3
		280	167	76	48 / 48	0.27	76.6	151	82	46 / 46	0.37	102.1
	2900	581	84	94	59 / 56	0.54	65.0	84	112	55 / 54	0.81	85.9
		581	122	102	56 / 55	0.66	68.8	114	125	53 / 52	0.96	92.2
		581	157	122	53 / 53	0.81	75.2	153	145	50 / 50	1.19	102.6
20	1800	243	84	78	53 / 52	0.14	82.5	84	93	49 / 49	0.21	113.1
		243	128	90	50 / 50	0.18	91.6	103	98	48 / 48	0.24	119.0
		243	168	96	48 / 48	0.22	99.8	159	105	46 / 46	0.30	136.3
	4300	582	84	127	60 / 57	0.54	82.5	84	163	55 / 54	0.82	113.1
		582	115	145	57 / 56	0.64	88.9	110	179	53 / 53	0.94	121.1
		582	157	162	55 / 54	0.80	97.6	150	196	52 / 51	1.15	133.5
25, 50	2300	311	84	92	55 / 53	0.21	82.5	84	111	51 / 50	0.31	113.1
		311	122	105	52 / 51	0.26	90.3	115	121	49 / 49	0.38	122.7
		311	163	120	49 / 49	0.32	101.0	153	132	47 / 47	0.44	137.7
	4300	582	84	127	60 / 57	0.54	82.5	84	163	55 / 54	0.82	113.1
		582	115	145	57 / 56	0.64	88.9	103	175	54 / 53	0.91	119.0
		582	157	162	55 / 54	0.80	97.6	125	186	53 / 52	1.00	125.8
30, 60	2700	276	84	112	54 / 53	0.17	106.5	84	134	50 / 50	0.26	146.9
		276	129	129	51 / 51	0.22	118.8	115	145	48 / 48	0.31	159.6
		276	160	143	49 / 48	0.25	130.2	155	157	46 / 46	0.37	180.3
	5700	583	84	165	60 / 57	0.55	106.5	84	211	56 / 55	0.82	146.9
		583	102	179	58 / 57	0.60	111.5	102	226	54 / 54	0.89	154.3
		583	125	194	57 / 56	0.67	117.7	126	241	53 / 53	1.00	164.1
35, 70	3200	327	84	124	55 / 54	0.23	106.5	84	151	51 / 51	0.34	146.9
		327	88	133	54 / 53	0.24	110.5	103	160	50 / 50	0.39	154.7
		327	156	152	51 / 51	0.33	126.2	124	167	49 / 49	0.42	163.3
	5700	583	84	165	60 / 57	0.55	106.5	84	211	56 / 55	0.82	146.9
		583	102	179	58 / 57	0.60	111.5	102	226	54 / 54	0.89	154.3
		583	125	194	57 / 56	0.67	117.7	126	241	53 / 53	1.00	164.1
40, 80	3700	340	84	140	56 / 54	0.24	115.2	84	171	52 / 51	0.36	159.2
		340	122	160	53 / 52	0.30	126.7	109	184	50 / 50	0.42	170.6
		340	162	174	51 / 51	0.36	138.9	160	200	48 / 48	0.54	193.9
	6300	580	84	181	60 / 57	0.54	115.2	84	231	56 / 55	0.81	159.2
		580	104	198	58 / 57	0.60	121.2	104	249	54 / 54	0.89	168.4
		580	146	225	56 / 55	0.73	134.0	125	264	53 / 53	0.98	177.9

CONVERSIONS: 2119 SCFM = 1 m<sup>3</sup>/s, 196.8 FPM = 1 m/s, 3.412 MBH = 1 kW, (°F-32) 5/9= °C, 1 IN. W.C. = 248.8 Pa, 1 LB. = 0.453 kg.

NOTES: 1) Data certified in accordance with ARI Standard 410.

2) Capacity based on 80°F EDB, 67°F EWB, 45°F EWT, 70 GPM.

3) Weight listed is the total weight of the dry coil.

4) Consult customer service department for special coil requirements.

# Cooling Coil Options (CO) — Table 11B

## Indoor Arrangement (K) - Chilled Water Cooling Coil Performance Data 95°F Entering Dry Bulb, 74°F Entering Wet Bulb

OPTIONS

Capacity based on 95°F EDB, 74°F EWB, 45°F EWT, 70 GPM												
Unit Capacity (CA)	Air Flow (SCFM)	Face Velocity (FPM)	Fin Spacing (FPF)	NUMBER OF ROWS								
				4				Fin Spacing (FPF)	6			
				Capacity (MBH)	L.A.T. (DB / WB)	A.P.D. (In.W.C.)	WT. (LBS)		Capacity (MBH)	L.A.T. (DB / WB)	A.P.D. (In.W.C.)	WT. (LBS)
10	1000	200	84	66	55 / 54	0.10	63.5	84	77	50 / 49	0.15	85.9
		200	94	69	54 / 53	0.11	64.9	114	82	48 / 48	0.18	92.2
		200	163	79	49 / 49	0.15	74.6	146	86	46 / 46	0.21	101.1
	2400	480	84	121	62 / 59	0.41	65.0	84	143	57 / 56	0.62	85.9
		480	120	130	60 / 58	0.50	68.6	107	155	55 / 54	0.71	90.7
		480	162	144	57 / 56	0.62	74.4	153	180	50 / 50	0.89	102.6
15	1400	280	84	83	58 / 56	0.18	63.5	84	100	50 / 49	0.26	85.9
		280	109	96	54 / 53	0.21	68.5	113	108	50 / 49	0.32	92.0
		280	160	107	50 / 50	0.26	75.6	155	114	48 / 48	0.37	100.8
	2900	581	84	123	66 / 62	0.54	63.5	84	159	59 / 58	0.81	85.9
		581	104	135	63 / 60	0.61	66.3	109	174	57 / 56	0.93	91.1
		581	125	145	61 / 59	0.66	69.3	152	192	54 / 54	1.15	100.2
20	1800	243	84	111	57 / 55	0.14	82.5	84	132	51 / 51	0.21	113.1
		243	101	119	55 / 54	0.16	86.0	106	140	49 / 49	0.24	119.9
		243	126	127	53 / 52	0.18	91.2	152	152	47 / 46	0.29	137.4
	4300	582	84	179	66 / 62	0.54	82.5	84	230	60 / 58	0.81	113.1
		582	103	195	64 / 61	0.60	86.4	112	254	57 / 56	0.93	121.8
		582	126	211	61 / 60	0.66	91.2	154	279	54 / 54	1.16	134.8
25, 50	2300	311	84	130	59 / 57	0.21	82.5	84	158	53 / 53	0.31	113.1
		311	111	144	56 / 55	0.25	88.1	110	170	51 / 51	0.37	121.1
		311	163	161	53 / 52	0.31	98.8	154	188	48 / 48	0.45	138.0
	4300	582	84	179	66 / 62	0.54	82.5	84	230	60 / 58	0.81	113.1
		582	103	195	64 / 61	0.60	86.4	112	254	57 / 56	0.93	121.8
		582	126	211	61 / 60	0.66	91.2	154	279	54 / 54	1.16	134.8
30, 60	2700	276	84	158	58 / 56	0.17	106.5	84	190	53 / 52	0.26	146.9
		276	110	174	55 / 54	0.20	113.6	106	202	51 / 50	0.30	155.9
		276	156	192	52 / 52	0.25	126.2	155	217	48 / 48	0.37	176.0
	5700	583	84	232	66 / 62	0.54	106.5	84	297	60 / 59	0.80	146.9
		583	110	260	63 / 61	0.61	113.6	112	328	58 / 57	0.92	158.4
		583	158	297	60 / 59	0.78	126.8	156	362	55 / 55	1.16	176.4
35, 70	3200	327	84	175	60 / 58	0.23	106.5	84	214	54 / 53	0.34	146.9
		327	108	192	57 / 56	0.26	113.1	109	230	52 / 52	0.40	157.1
		327	156	215	54 / 53	0.32	126.2	156	248	49 / 49	0.49	176.4
	5700	583	84	232	66 / 62	0.54	106.5	84	297	60 / 59	0.80	146.9
		583	111	261	63 / 61	0.61	113.9	112	328	58 / 57	0.92	158.4
		583	155	295	60 / 59	0.77	125.9	156	362	55 / 55	1.16	176.4
40, 80	3700	340	84	198	61 / 58	0.24	115.2	84	242	55 / 54	0.36	159.2
		340	114	221	57 / 56	0.29	124.3	111	262	52 / 52	0.43	171.6
		340	159	245	54 / 54	0.35	137.9	156	293	49 / 49	0.52	196.8
	6300	580	84	255	66 / 62	0.53	115.2	84	326	60 / 59	0.79	159.2
		580	104	279	64 / 61	0.59	121.2	110	358	58 / 57	0.90	171.1
		580	126	301	62 / 60	0.65	127.9	155	396	55 / 55	1.14	191.6

CONVERSIONS: 2119 SCFM = 1 m<sup>3</sup>/s, 196.8 FPM = 1 m/s, 3.412 MBH = 1 kW, (°F-32) 5/9= °C, 1 IN. W.C. = 248.8 Pa, 1 LB. = 0.453 kg.

NOTES: 1) Data certified in accordance with ARI Standard 410.

2) Capacity based on 95°F EDB, 74°F EWB, 45°F EWT, 70 GPM.

3) Weight listed is the total weight of the dry coil.

4) Consult customer service department for special coil requirements.



## Gas Type (GT)

### Model Digit 9

Sterling Indoor Make-Up Air Heating systems are available from the factory equipped for Natural or LP gas. Natural gas units are equipped for altitudes up to 2,000 ft. (610m.) above sea level. Please state altitude if above 2,000 ft. (610m.) when placing your order for proper factory settings.

#### Gas Type [GT]

- 1 - Natural Gas with Standard Solid State Ignition Control
- 2 - Propane (LP) Gas with 100% Shutoff Solid State Ignition Control
- 3 - Natural Gas with 100% Shutoff Solid State Ignition Control

Gas Type "3" and Unit Type "ME" and "MS" is required for IRI (Industrial Risk Insurers) compliance.

## Gas Control (GC)

### Model Digit 10

In order to meet your most demanding applications from Single Zone Single Stage to Multi Zone Multi Stage to Direct Digital Control (DDC) with turn down ratios as high as 6:1 and modulated output, Sterling offers the

following factory installed gas controls. Providing the high quality and performance you've come to rely on with Sterling HVAC Products.



GC - K



GC - L, M, N, P



GC - R, S, T



GC - U, W, X, Y

#### Gas Control [GC]

**A - One Stage Gas.** Provides On/Off gas control in response to a room or duct thermostat.

**B - Two Stage Gas.** Provides two stages of gas control Low 50% and High 100% rates of fire in response to a room or duct thermostat.

**H - Electronic Modulation with Room Sensing.** Modulates from 100% to 50% of the units rated input in response to the setpoint setting of an electronic room sensor. Electronic Modulation is capable of maintaining discharge temperature within + - 1°F; 60-85°F range.

**J - Electronic Modulation with Duct Sensing.**

Modulates from 100% to 50% of the units rated input in response to the setting of a remote setpoint and an electronic duct sensor. Electronic Modulation is capable of maintaining discharge air temperature within + - 1°F; 55-90°F.

**K - Electronic Modulation with Duct Sensing and Override Stat.**

Same as “J” with the addition of a room override stat. The room override stat signals the electronic controller in the event that room temperature has dropped below its setpoint. In response the electronic control increases the rate of modulated input to the unit in proportion to the difference between sensed room temperature and the setpoint.

**L - Electronic Modulation with External 4-20 mA input, furnace one only.**

Setup for the first furnace in multi furnace units with any additional furnaces being single stage. This Gas Control requires a Direct Digital Controller (DDC) or other external signal source. Modulates from 100% to 50% of the first furnaces rated input in response to an analog input of 4-20 mA from an external controller. Additional furnace sections of the unit are actuated by digital outputs from the external controller based upon the control program.

**M - Electronic Modulation with External 4-20 mA input, all furnaces.**

This Gas Control requires a Direct Digital Controller (DDC) or other external signal source. Modulates from 100% to 50% of the units rated input in response to an analog input of 4-20 mA from an external controller.

**N - Electronic Modulation with External 0-10 VDC input, furnace one only.**

Same as “L” except a 0-10 VDC input signal is required.

**P - Electronic Modulation with External 0-10 VDC input, all furnaces.**

Same as “M” except a 0-10 VDC input signal is required.

**R - Remote Temperature Control, Two Stage.**

Provides two stage control utilizing a T775 temperature controller, electronically sensing room or duct temperature and actuating stages based upon programmed setpoints and temperature differentials between stages.

**S - Remote Temperature Control, Three Stage.**

Same as “R” except with three stage control.

**T - Remote Temperature Control, Four Stage.**

Same as “R” except with four stage control.

**U - S350 Modular Electronic Control System, Two Stage.**

Basic system utilizes a controller module with discharge air sensor, setpoint and one stage output, a stage module with differential set point and one stage output and a display module with LCD display for temperature readout. The system stages the units rate of fire based upon sensed discharge air temperature, setpoint setting and differential setting between stages; -30 to 130°F range.

Note: When utilizing outside and return air with modulating damper refer to Air Control [AC] item “R” for the S350 proportional air control.

**W - S350 Modular Electronic Control System, Three Stage.**

Same as “U” with the addition of a stage module.

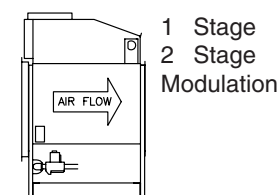
**X - S350 Modular Electronic Control System, Four Stage.**

Same as “U” with the addition of two stage modules.

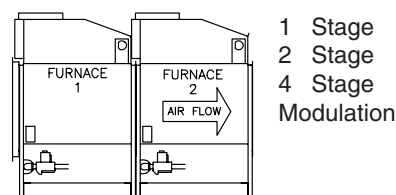
**Y - S350 Modular Electronic Control System, Six Stage.**

Same as “U” with the addition of four stage modules.

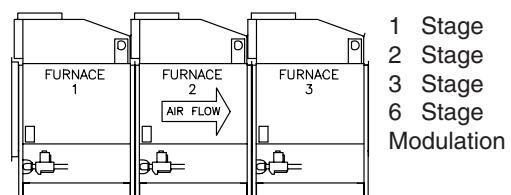
**Gas Control Reference**



Single Furnace  
CA “10 - 40”



Dual Furnace  
CA “50 - 80”



Triple Furnace  
CA “12”

## Supply Voltage (SV)

### Model Digit 11

The standard Supply Voltages for Sterling Indoor Make-Up Air Units Products are listed below.

- 1 - 115 VAC, Single Phase, 60 Cycle
- 2 - 208 VAC, Single Phase, 60 Cycle
- 3 - 230 VAC, Single Phase, 60 Cycle
- 4 - 208 VAC, Three Phase, 60 Cycle
- 5 - 230 VAC, Three Phase, 60 Cycle
- 6 - 460 VAC, Three Phase, 60 Cycle
- 7 - 575 VAC, Three Phase, 60 Cycle

## Motor Type (MT)

### Model Digit 12

Blower Motors are available in Open Drip Proof, Totally Enclosed, Premium Efficiency Open Drip Proof, Premium Efficiency Totally Enclosed and Two Speed Open Drip Proof One or Two Winding. Motors are ball bearing type with a resilient base and NEMA frame sizes from 48 to 256T. Windings are Class "B", 1800 RPM with service factors of 1/2-3/4 HP. = 1.25 and 1-15 HP. = 1.15. Motors are in compliance with the Energy Policy Act (EPACT) of 1992.

- 1 - Open Drip Proof Motor. (ODP)
- 2 - Totally Enclosed. (TEFC)
- 3 - Premium Efficiency Open Drip Proof. (PEODP)
- 4 - Premium Efficiency Totally Enclosed. (PETE)
- 5 - 2 Speed 1 Winding Open Drip Proof. (2-1 ODP)
- 6 - 2 Speed 2 Winding Open Drip Proof. (2-2 ODP)

## Motor Size (MS)

### Model Digit 13

Motors are available from 1/2 to 15 HP. Thermal Protection is automatic for most motors up to 5 HP., a Magnetic Starter with IEC (International Electrotechnical Commission) type over current protection must be used for motors without automatic thermal protection, motors above 5 HP., and all two-speed motors.

- A - 1/2 HP. with Contactor
- B - 3/4 HP. with Contactor
- C - 1 HP. with Contactor
- D - 1 1/2 HP. with Contactor
- E - 2 HP. with Contactor
- G - 3 HP. with Contactor
- H - 5 HP. with Contactor
- J - 1/2 HP. with Magnetic Starter and IEC over current protection.
- K - 3/4 HP. with Magnetic Starter and IEC over current protection.
- L - 1 HP. with Magnetic Starter and IEC over current protection.
- M - 1 1/2 HP. with Magnetic Starter and IEC over current protection.
- N - 2 HP. with Magnetic Starter and IEC over current protection
- P - 3 HP. with Magnetic Starter and IEC over current protection.
- R - 5 HP. with Magnetic Starter and IEC over current protection.
- S - 7 1/2 HP. with Magnetic Starter and IEC over current protection.
- T - 10 HP. with Magnetic Starter and IEC over current protection.
- U - 15 HP. with Magnetic Starter and IEC over current protection.

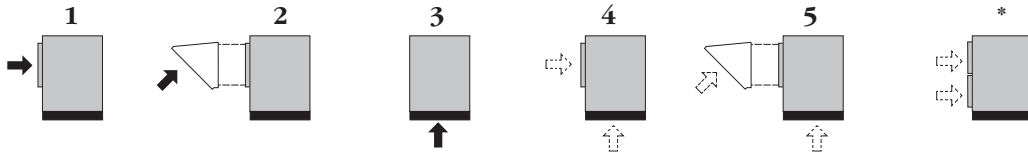
Note: Refer to Table 15, page 58 for Full Load Ampacity ratings for motors.



# Air Inlet Configuration (AI)

## Model Digit 14

The Air Inlet Configuration [AI] defines the entering air openings for Sterling Indoor Make-Up Air Units. This item does not include dampers and must match the required opening for Air Control and Damper



- 1 - 100% Outside Air Opening (Horizontal Inlet) or 100% Return Air Opening.
- 2 - 100% Outside Air Opening with Intake Hood. (Horizontal Inlet) (Shipped separately)
- 3 - Bottom Return Air Opening.

Arrangement [AC]. A horizontal return air feature is offered on air inlet configurations 4 and 5 (includes moisture eliminators as standard when [AI] 5 is chosen). Refer to accessory [AS] No. A2. See Accessories [AS] A2 Horizontal Outside and Return Air Openings.\*

- 4 - Outside and Return Air Opening.
- 5 - Outside and Return Air Opening with Intake Hood. (Shipped separately)
- \* - Horizontal Outside and Return Openings (See Accessories [AS])

# Air Control and Damper Arrangement (AC)

## Model Digit 15

- A - **Outside air damper with 2 Position spring return damper motor.** Outside air damper opens upon energizing the unit blower motor.
- B - **Return air damper with 2 Position spring return damper motor.** Return air damper opens upon energizing the unit blower motor.
- C - **Outside and Return air interlocked dampers with 2 Position spring return damper motor.** Outside air damper opens and return air damper closes upon energizing the unit blower motor.
- D - **Outside and Return air interlocked dampers with Modulating damper motor, Mixed air temperature control and minimum position potentiometer.** Outside and return air dampers modulate in response to the mixed air temperature setpoint and allow minimum outside air setting.
- E - **Outside and Return air interlocked dampers with Modulating spring return damper motor, Mixed air temperature control and minimum position potentiometer.** Outside and return air dampers modulate in response to the mixed air temperature setpoint and allow minimum outside air setting. When de-energized outside air dampers close and return air dampers open.

- G - **Outside and Return air interlocked dampers with Modulating damper motor and Mixed air temperature control.** Outside and return air dampers modulate in response to the mixed air temperature setpoint.
- H - **Outside and Return air interlocked dampers with Modulating spring return damper motor and Mixed air temperature control.** Outside and return air dampers modulate in response to the mixed air temperature setpoint. When de-energized outside air dampers close and return air dampers open.
- J - **Outside and Return air interlocked dampers with Modulating damper motor and positioning potentiometer.** Outside and return air dampers open and close with respect to the setting of the positioning potentiometer.
- K - **Outside and Return air interlocked dampers with Modulating spring return damper motor and positioning potentiometer.** Outside and return air dampers open and close with respect to the setting of the positioning potentiometer. When de-energized outside air dampers close and return air dampers open.

- L - Outside and Return air interlocked dampers with Modulating damper motor. Mixed air temperature control, minimum position potentiometer and Dry Bulb Economizer.** Outside and return air dampers modulate in response to the mixed air temperature setpoint and allow minimum outside air setting. Dampers respond to the economizer when the outside air temperature is within the set point range by opening the outside and closing the return air damper to achieve free cooling effect.
- M - Outside and Return air interlocked dampers with Modulating spring return damper motor. Mixed air temperature control, minimum position potentiometer and Dry Bulb Economizer.** Outside and return air dampers modulate in response to the mixed air temperature setpoint and allow minimum outside air setting. Dampers respond to the economizer when the outside air temperature is within the set point range by opening the outside and closing the return air damper to achieve free cooling effect. When de-energized outside air dampers close and return air dampers open.
- N - Outside and Return air interlocked dampers with Modulating spring return damper motor and Enthalpy Controlled Economizer.** Outside and return air dampers modulate in response to the heat content of sensed mixed air. The air mixture is optimized to provide inlet air with the lowest possible load characteristics in both heating and cooling modes. When de-energized outside air dampers close and return air dampers open.
- P - Outside and Return air interlocked dampers with Modulating damper motor and Atmospheric Pressure sensor.** Outside and return air dampers modulate in response to sensed building pressure, typically maintaining a slightly positive building pressure in order to reduce heat loss due to infiltration.
- Q - Outside and Return air interlocked dampers with Modulating damper motor and CO<sub>2</sub> (Carbon Dioxide) Monitor.** Outside and return air dampers modulate in response to the CO<sub>2</sub> monitor set point. Monitor is located in the return air stream. On a rise in CO<sub>2</sub> level, the outside damper modulates open and the return air damper closes. A decrease in CO<sub>2</sub> level modulates the outside air damper closed and opens the return air damper. When the unit is de-energized, the damper motor will close the outside air damper and open the return air damper. Equipped with one normally open contact for alarm light or bell to guard against times of sustained high CO<sub>2</sub> levels. CO<sub>2</sub> monitor is shipped loose for field installation.
- R - Outside and Return air interlocked dampers with Modulating spring return damper motor and S350 Proportional Mixed air control.** Outside and return air dampers modulate in response to the mixed air temperature setpoint, and allow minimum outside air setting. When de-energized outside air dampers close and return air dampers open.
- S - Outside and Return air interlocked dampers with Modulating damper motor and 0-10VDC or 4-20mA input.** Requires an external input signal from a Direct Digital Controller (DDC). Provides proportional control from a building management system or electronic controller based upon programmed parameters.
- T - Outside and Return air interlocked dampers with Modulating spring return damper motor and 0-10VDC or 4-20mA input.** Requires an external input signal from a Direct Digital Controller (DDC). Provides proportional control from a building management system or electronic controller based on programmed parameters. When de-energized outside air dampers close and return air dampers open.
- U - ASHRAE Cycle I,** Outside and Return dampers with 2 Position spring return damper motor and warm-up thermostat. When energized dampers open in response to the warm-up thermostat preventing cold air starts.
- W - ASHRAE Cycle II,** Outside and Return air interlocked dampers with Modulating spring return damper motor. Mixed air temperature control, minimum position potentiometer and warm-up thermostat. Outside and return air dampers modulate in response to the mixed air temperature setpoint and allow minimum outside air setting once the warm-up thermostat has been satisfied. When de-energized outside air dampers close and return air dampers open.
- X - ASHRAE Cycle III,** Outside and Return air interlocked dampers with Modulating spring return damper motor. Mixed air temperature control and warm-up thermostat. Outside and return air dampers modulate in response to the mixed air temperature setpoint once the warm-up thermostat has been satisfied. When de-energized outside air dampers close and return air dampers open.
- Y - Manual Outside and return air dampers.** Dampers are locked into position utilizing a manual quadrant for field adjustment.

# Accessories (AS)

## Model Digit 16/+

### Mechanical Accessories

**A1- Moisture Eliminators.** Use in place of the bird screen with an Outside Air Hood. This item includes an electrically interlocked differential pressure switch with indicator lamp in case of blockage. Standard on units with optional horizontal return (Accessories option A2).

**A2- Horizontal Return.** Locates the return air opening under the outside air opening location. For units with both Outside and Return Air Openings [AI] Model Digit #14 (4) or (5). Includes moisture eliminators as standard when [AI] 5 is chosen.

**A3- Low Leak Damper.** This item includes vinyl blade edge seals with a standard opposed blade galvanized steel damper and neoprene nylon bushings. For outside side air inlet only

**A5- 409 Stainless Steel Drip Pan.** Replaces the standard aluminized steel furnace drip pan (MU and ME only).

**A6- High Altitude Unit.** Unit is orificed for altitudes above 2000 feet (610m)\* 2 stage units include a factory installed delay timer, allowing the unit to initially fire at 100% for 10 sec. then drop back to low fire and respond to thermostat demand.

\*Note: Specify altitude when over 2000 feet (610m).

**A7- High Pressure Regulator.** Required where main line pressure exceeds 14" W.C. (1/2 psig) and not over 2 psig. One regulator per furnace required, shipped separately.

**A8- Input Derate.\*\*** Unit is derated up to 50% for specific design applications.

\*\* **Note:** Specify altitude when over 2000ft. (610m). Unit performance must be adjusted for percentage of de-rate.

### Filters

**B1- 1 in. Washable Filters.** (Standard)

**B2- 2 in. Washable Filters.**

**B3- 2 in. Throwaway Filters.**

**B4- 1 in. High Efficiency 30% Filters.**

**B5- 2 in. High Efficiency 30% Filters.**

Capacity [CA]	10,15	20, 25, 50	30, 35, 60, 70	40, 80,12
Indoor Arrangement [IA] B, D (Qty.)Filter Size	(4)16 X 20	(4)20 X 20	(4)16 X 20 (2)20 X 20	(6)20 X 20
Indoor Arrangement [IA] G, K (Qty.)Filter Size	(8)16 X 20	(8)20 X 20	(8)16 X 20 (4)20 X 20	(12)20 X 20

### Evaporative Cooler Accessories

**C1- Fill & Drain Kit.** Includes 3 way valve and relay for automatic fill and drain for Evaporative Cooling units. Field installed.

**C2- 12 in. CELdek® Media.** Optional high efficiency 12" media replaces standard 8" in. media.

**C3- Freezestat.** Automatic shutoff and drain upon meeting outside air setpoint when used with "Fill and Drain kit".

**C4 - 8 in. GLASdek®.** Optional 8 inch GLASdek® evapora-

tive cooler media is available in lieu of the standard 8 inch Celdek®. GLASdek® media is manufactured from a wettable fiberglass and is designed for applications requiring UL900 Class II fire rating.

**C5 - 12 in. Glasdek®.** Optional 12 inch GLASdek® evaporative cooler media is available in lieu of the standard 8 inch Celdek®. GLASdek® media is manufactured from a wettable fiberglass and is designed for applications requiring UL900 Class II fire rating.

### Time Clocks

**D1- 7 Day Time Clock.** Provides single pole double throw (SPDT) relay output at setpoint time with Maximum 6 setpoints per day, field installed.

**D2- 24 Hour Time Clock.** Provides single pole double throw (SPDT) relay output at setting time with Maximum 12 setpoints per day, field installed.

## Electrical Accessories

**E1- Clogged Filter Switch.** Factory installed differential pressure switch with clogged filter indicator lamp located in the main electrical cabinet.

**E2- Ground Fault Convenience Outlet 115VAC.** G.F.I. outlet manual reset with weatherproof enclosure, field installed.



AS - D2



AS - E3



AS - G3



AS - G4



AS - G5



AS - J2 AS - J3

**E3- Remote Control Panel.** Wall mounted and distinctively styled the “Sterling Remote Panel” offers 6 LED status lamps with System On/Off, Fan Auto/On, Heat Auto/Off, Cool Auto/Off, Auxiliary On/Off switching and Modulating damper potentiometer mounting. Designed for E-Z Installation with plug-in terminal block wiring and wall mounting bracket. Field installed. (Auxiliary On/OFF may be used with Evaporative Cooler Fill & Drain Kit or exhaust fan) [6<sup>1</sup>/<sub>4</sub>" W X 3<sup>3</sup>/<sub>4</sub>" H X 1<sup>3</sup>/<sub>8</sub>" D]

**E4- Manual Blower Switch.** Factory installed in the electrical cabinet to provide manual blower operation.

## Duct and Room Thermostats

**F1- One Stage Duct Thermostat.** Field installed, single pole double throw switching. 55-175°F. setpoint range. [2" W X 5<sup>5</sup>/<sub>8</sub>" H X 2<sup>7</sup>/<sub>16</sub>" D]

**F2- Two Stage Duct Thermostat.** Field installed, single pole double throw switching; 55-175°F. setpoint range. [2" W X 5<sup>5</sup>/<sub>8</sub>" H X 2<sup>7</sup>/<sub>16</sub>" D]

**G1- T87F Thermostat with Subbase.** Single stage heating thermostat. Subbase includes fan switching relay. Standard round styling suitable for any decor; 50-100°F. range.

**G2- T87F Thermostat with Subbase & Guard.** Same features as “G1” except a tamper proof guard is included.

**G3- T834H Sterling Thermostat with Subbase.** Single stage heating thermostat with fan switch. Manufactured exclusively for Sterling with the “Sterling” logo embossed on the face plate; 55-95°F. range. [3<sup>1</sup>/<sub>2</sub>" W X 4<sup>3</sup>/<sub>4</sub>" H X 1<sup>3</sup>/<sub>8</sub>" D]

**G4- T7300 Programmable Commercial Thermostat.** Provides 7 day programmability for 2 stages of heating and 2 stages of cooling. With Heat, Off, Cool, Auto system switching 4 time periods per day for occupied and un-occupied modes with 3 hour override of un-occupied mode. Automatic Heat-Cool changeover and battery backup. Includes fan and heating relays; 45-95°F. range. [8" W X 4<sup>5</sup>/<sub>8</sub>" H X 1<sup>3</sup>/<sub>4</sub>" D]

**G5- T874 Two Stage Thermostat.** 2 stage heating and 2 stage cooling with system and fan switching and built in 12°F heating / cooling differential. Includes fan relay; 42-88°F. range. [5<sup>5</sup>/<sub>8</sub>" W X 3<sup>1</sup>/<sub>2</sub>" H X 2<sup>1</sup>/<sub>8</sub>" D]

**G6 - TG511 Locking Thermostat Cover.** Universal locking thermostat cover for use with all thermostats listed.

## Freeze and Fire Protection

**H1- Return Firestat.** 110°-290°F setting range with single pole double throw (SPDT) output. The Return Firestat is electrically interlocked to shut down the unit upon reaching the setpoint with manual reset. Factory mounted in the return air stream. This item is utilized as a reverse air flow switch and included as standard with Sterling Packaged Indoor units. Order with Indoor Arrangement [IA] “A” when applicable.

**H2- Supply Firestat.** 110°-290°F setting range with single pole double throw (SPDT) output. The Supply Firestat is electrically interlocked to shut down the unit upon reaching the setpoint with manual reset. Factory mounted in the supply air stream.

## Interlock Relays

**J1- 24 Volt DPDT Relay.** Plug-in, Type 2, Form C relay with 24 volt coil and double pole double throw 10 amp. contacts. This relay plugs in to the Main Connection PC board in the electrical cabinet. Included with Packaged units utilizing an evaporative cooler (Indoor Arrangements [IA] “D”) or may be utilized as an exhaust fan interlock. When energized at terminal “K2” of the main connection board, the blower is engaged and outside air dampers are opened to 100% position. Factory installed.

**J2- 24/115 Volt SPDT Relay.** This relay has selectable coil voltage of 24 or 115 volts and single pole double throw 10 amp contacts with LED On indicator lamp. Relay is utilized as an auxiliary relay when “J1” does not apply for exhaust fan interlock or digital interface with an external control. Factory mounted and wired when applicable.

## Limits and Indicator Lamps

**K1- Manual Reset High Limit Switch.** This field installed, non-cycling type limit opens on temperature rise at 200°F and disengages heating.

**K2- High / Low Gas Pressure Limits.** High / Low gas pressure limits disengage heating upon detecting either low line pressure or high manifold pressure. Factory Installed.

**K3- Status Lamps.** Long life factory installed LED lamps located in the electrical cabinet. The status lamps are designed as a troubleshooting aid and setup for indicating Power On, Fan On, Heating energized at furnace one, two, three and cooling energized when applicable.

**H3- Time Delay Freezestat.** 30°-58°F setting range with single pole double throw (SPDT) output. Time delay adjustment range - 1 minute to 5 minutes. The Freezestat is electrically interlocked to insure minimum discharge air temperature. Factory mounted in the electrical compartment.

**H4 - Ambient Lockout.** Factory mounted. Disengages duct furnace(s) from firing in times of mild ambient temperatures.

**J3- 24/115/230 Volt DPDT Relay.** This relay has selectable coil voltage of 24, 115 or 230 volts and double pole double throw 10 amp contacts. Relay is utilized as an auxiliary relay for general purpose duty. Factory mounted and wired when applicable.

**Note:** Relay “J2” and “J3” are shipped loose unless otherwise specified.

**J4- 24 Volt 4PDT Relay.** This relay has a coil voltage of 24 volts and four pole double throw 10 amp contacts. Relay is utilized as standard for packaged units that include an Evaporative Cooler or Coil Cabinet and may be utilized as an auxiliary relay for general purpose duty. Factory mounted and wired when applicable.

**Note:** Relay “J4” is shipped loose unless otherwise specified.

**Note:** Blocked inlet and Clogged filter indicator lamps are standard with “A1” and “E1”.

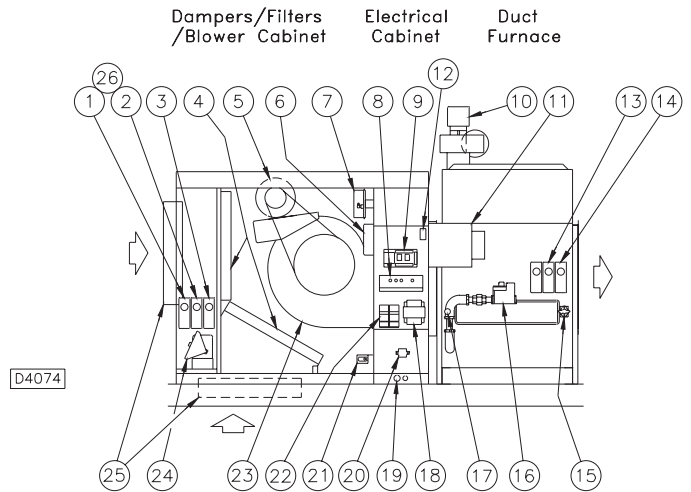
**K4- Fan Time Delay.** The solid state fan time delay is standard with all packaged rooftop arrangements except Indoor Arrangement [IA] “A” duct furnace (50-12), only. The fan time delay provides a 60 second delay on and 120 second delay off, for blower operation.

**K5- Air Flow Prove Switch.** Field installed. A Dwyer 1910-0 pressure switch suitable for duct or plenum mounting, with a range of 0.15 - 0.5 inches W.C. is provided.

## Disconnect Switches

- L1- 30 Amp. Fused Disconnect.** Field installed.
- L2- 30 Amp. Non Fused Disconnect.** Field installed.
- L3- 60 Amp. Fused Disconnect.** Field installed.
- L4- 60 Amp. Non Fused Disconnect.** Field installed.
- M1- Drafter.** Optional. Field installed with “MU” units only; 1 required per furnace
- M2- Vent Caps.** 4", 5" or 6" outdoor vent caps for flue termination. Field Installed.
- M3- Adapters (4-5 in.)** Required on “ME” and “MS” units Capacities [CA] 10 and 15. Reduces 5" power venter discharge to recommended 4" vent pipe. Field installed.
- M4- Vertical Concentric Vent Kit (MS units only):** Allows for single pipe vent penetration for both the combustion and exhaust air in a vertical position (rooftop).
- M5- Horizontal Concentric Vent Kit (MS units only):** Allows for single pipe vent pipe penetration for both the combustion and exhaust air in a horizontal position (sidewall).
- N1- Hinged Access Doors:** Hinged doors are mounted to the access side of the standard Blower / Filter / Damper cabinet and High CFM Filter / Damper and Blower cabinets in lieu of the standard removable access doors. The hinged doors include dual, quick opening tool-less latches and full perimeter gasketing to assure a water tight seal. Door stops are included to guard against closure while open. The Duct Furnace(s) cabinets are supplied with a standard removable door.
- N5- Service Convenience Package:** Includes a factory mounted switch type fused disconnect and GFI convenience outlet mounted behind a hinged access door on the units' blower section. Both items are accessible from the outside of the unit via a weather proof hinged access door. This accessory also includes option number N1.
- N6- Double Wall Cabinet Construction:** consists of a 24 gauge inner liner wall with 1" 1-1/2 LB density insulation. As an added advantage, Sterling includes hinged access doors (current accessory option AS-N1) standard with the double wall option. Available on the filter / damper, blower, coil and plenum cabinets only.

## Component Locations



1. Mixed Air Controller
2. Return Firestat
3. Economizer
4. Filters
5. Blower Motor
6. Reverse Air Flow Switch
7. Clogged Filter Switch
8. High Voltage Barrier and Lamp and Circuit Breaker Mount
9. Main Connection Board with Fan Time Delay and Function Relays
10. Power Venter/Motor Assembly (Includes relay and air pressure switch)
11. Junction Box/Ignitor
12. Time Delay Freezestat
13. Supply Firestat
14. Duct Thermostat
15. Primary Safety Limit
16. Gas Valve
17. High Limit Safety Switch
18. Transformer
19. Electrical Wiring Inlet
20. High Voltage Terminal Block
21. Door Safety Switch
22. Contactor
23. Centrifugal Blower
24. Damper Motor
25. Outside and Return Dampers
26. Ambient Lockout

[Power Vent ME Unit Shown]

# Evaporative Cooling Module

Unit Type [UT] ME, MU or MS

Indoor Arrangement [IA] - (D)

Evaporative Cooling is the simplest and most-cost effective cooling method without the use of mechanical refrigeration. Sterling Evaporative Cooling systems meet a wide range of commercial, industrial, and institutional heating and ventilating requirements. The Evaporative Cooler saves up to 80% on utility charges, requires little maintenance, and replaces exhausted, stale, indoor air with cool, clean, filtered outdoor air.

The quiet, dependable Evaporative Cooler may be purchased in four sizes from 800 CFM to 8500 CFM (0.4-4.0 m<sup>3</sup>/s), Capacities [CA] 10 thru 80. If an Evaporative Cooler is to be installed upstream of our duct furnace section(s), a 409 stainless steel heat exchanger is HIGHLY recommended.

## STANDARD FEATURES

- **High Cooling Efficiency** - Up to 88% saturation efficiency with standard 8" depth of CELdek® media, and up to 92% saturation efficiency with optional 12" depth media; 2" distribution pad to disperse water evenly. CELdek® media is impregnated with insoluble anti-rot salts and rigidifying saturants. The unique design of the CELdek® pads optimizes air and water mixing for maximum cooling.

- **Optional 8" or 12" GLASdek® Media** is also available.

- **Recirculating Pump** - Factory wired, sealed design, durable, thermally protected motor. Permanently lubricated bearings. Standard 115 Volt, 50/60 cycle. Optional 230V motor. Protective basket screen. U.L. recognized.

- **Heavy-Duty Stainless Steel Water Tank** - Stainless steel sump tank and water distributor designed to resist rust, corrosion, and scaling.

- **Ball Valve** - Single-entry ball valve regulates water flow using a 1/4 turn handle.

- **Bleed-Off** - Prevents excessive concentration of minerals in sump water.

- **Float Valve** - Brass float valve and rod with plastic float. Maintains proper water level in sump for most efficient operation. Factory installed in cabinet.

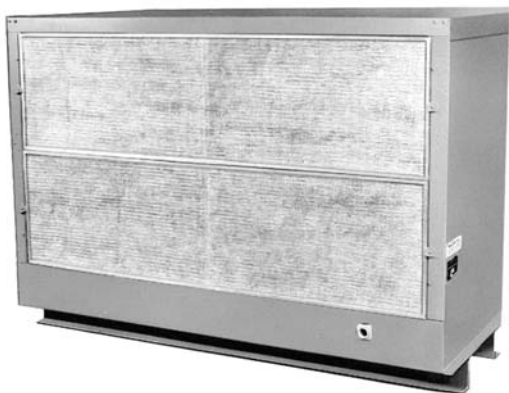
- **Drain and Overflow** - Drain is capped. Overflow controlled by float level allowing slight continued overflow. Optional automatic fill and drain kit is available for field installation.

- **Water Distribution** - Copper water distributor tube for corrosion-free operation and low maintenance.

- **Intake Filters** - Removable intake filters of easy-to-clean 1" aluminum mesh to remove insects, dust, and dirt from airflow.

- **Skid Rails** - With lifting and anchor holes. Optional platform curb assembly available, shipped separately (see Roof Curb Section)

- **Available** on capacities 10 thru 80 MBH for 800 CFM to 8500 CFM (0.4 m<sup>3</sup>/s to 4.0 m<sup>3</sup>/s), utilizing only 4 different cabinet widths.



Evaporative Cooler Module



Internal View Evaporative Cooler

# Evaporative Cooling Module

## Performance

Evaporative Cooling is most commonly used in areas where the relative humidity is low and the dry bulb temperatures are high. However, cooling through evaporation can be used in most areas.

Evaporative cooling is best utilized whenever the wet bulb depression (difference between dry and wet bulb temperature) is a minimum of 15 degrees.

The efficiency of the Sterling Evaporative Cooler is determined by a variety of factors: geographical location, application, air change requirements, sufficient water supply, air flow, and maintenance. In most instances, efficiency is expected to be between 77% and 88%. Heat gains in the distribution system will effect the final output temperature.

Use the psychrometrics chart (shown in Diagram #1) or actual humidity temperature readings to estimate the leaving dry bulb temperature at the outlet of the Evaporative Cooler.

### Example:

1. Entering Dry Bulb: 95°F
2. Entering Wet Bulb: 75°F
3. Wet Bulb Depression (95°F - 75°F) = 20°F
4. Effective Wet Bulb Depression (20°F X .85) = 17°F
5. Leaving Dry Bulb Temperature (95°F - 17°F) = 78°F
6. Leaving Wet Bulb = Entering Wet Bulb = 75°F

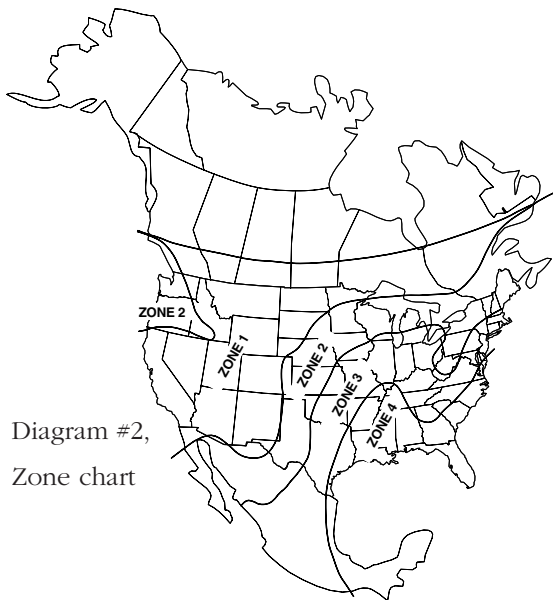


Diagram #2,  
Zone chart

## Selection Method

The easiest method for selecting an evaporative cooler, is to first determine the required number of air changes per minute.

- A. Using Diagram #2, choose the geographical zone in which the unit is to be installed.
- B. Determine the internal load within the structure:
  - Normal Load:** structures with normal people loads, and without high internal heat gains.

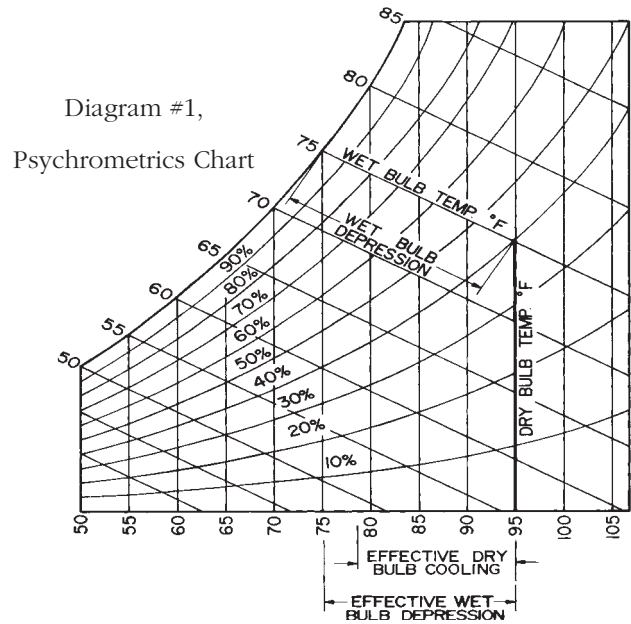


Diagram #1,

Psychrometrics Chart

**High Load:** Structures with high equipment loads (i.e. factories, laundromats, beauty salons, restaurant kitchens, etc.), and structures with high occupancy (nightclubs, arenas, etc.)

- C. Determine whether the structure has normal or high heat gains:
  - Normal Gain:** Structures that have insulated roofs, or are in shaded areas. Structures that have two or more stories, or facing directions with no sun.
  - High Gain:** Structures that have uninsulated roofs, unshaded areas, or rooms that are exposed to sun.
- D. Using table below, determine the required air changes per minute based on zone selection and the type of heat load.
- E. Finally, determine the air quantity for the space chosen, by calculating the volume (L x W x H). Multiply this volume by the air changes per minute.

### Example:

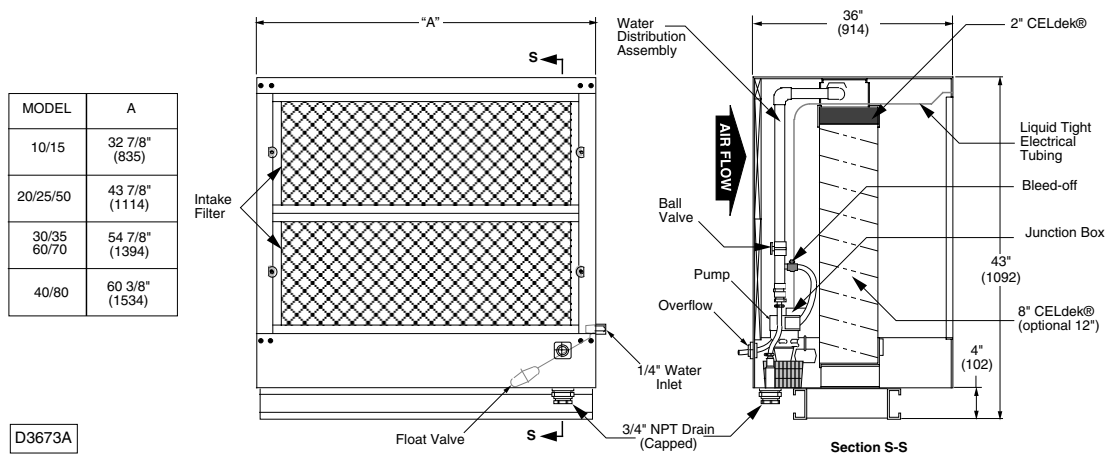
1. Structure Dimensions: 25 L x 24 W x 10 h= 6000 Ft<sup>3</sup>
2. Exterior Load Type: Normal
3. Interior Load Type: Normal
4. Location: Dallas, Texas- Zone 3
5. Air Changes Per Minute: 3/4
6. Evaporative Cooler Requirements:
  - 6000 ft<sup>3</sup> x 3/4 Air Change / minute- 4500 CFM Required

See Evaporative Cooler Performance Chart for unit size that would best apply.

Type Heat Load	Zone			
	1	2	3	4
High Load/ High Gain	3/4	1	1-1/3	2
High Load/Normal Gain	1/2	3/4	1	1-1/3
Normal Load/High Gain	1/2	3/4	1	1-1/3
Normal Load/Normal Gain	1/2	1/2	3/4	1



# Evaporative Cooling Module



Refer to page 23 or 29 for additional unit dimensions for arrangement "D".

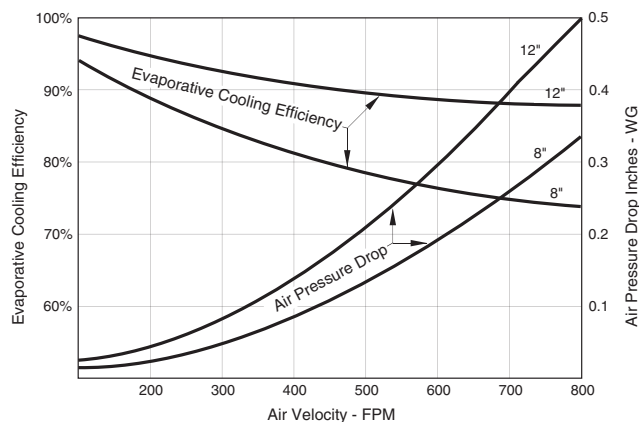
## Performance and Dimensional Data

Capacity 10-80	CFM		8" Saturation Efficiency Range		12" Saturation Efficiency Range		8" or 12" Media Face Area		Pressure Drop in. W.C.		"A" Unit Width	Shipping Wt.*	Operating Wt.*
	(cu. m/s) MIN.	(cu. m/s) MAX.	MIN.	MAX.	MIN.	MAX.	Ft. <sup>2</sup> (m <sup>2</sup> )	Size In. (mm)	(kPa) MIN.	(kPa) MAX.	in. (mm)	lb. (kg)	lb. (kg)
10,15	800 (0.378)	4,500 (2.124)	78	88	89	92	7.01 (0.65)	31 X 32-9/16 (787 x 827)	0.03 (0.01)	0.23 (0.06)	32-3/4 (832)	137 (62)	301 (136)
20,25,50	1,600 (0.755)	5,500 (2.596)	77	88	88	92	9.38 (0.87)	31 X 43-9/16 (787 x 1106)	0.03 (0.01)	0.20 (0.05)	43-3/4 (1111)	166 (75)	386 (175)
30,35,60,70	2,400 (1.133)	8,500 (4.012)	77	86	88	92	11.75 (1.09)	31 X 54-9/16 (787 x 1386)	0.05 (0.01)	0.30 (0.07)	54-3/4 (1391)	192 (87)	468 (212)
40,80	3,200 (1.510)	8,500 (4.012)	77	86	87	92	12.92 (1.20)	31 X 60 (787 x 1524)	0.07 (0.02)	0.28 (0.07)	60-1/4 (1530)	206 (93)	509 (231)

\*These weights are for the Evaporative Module only; see Table 14, page 57 for Arrangement "D" Total Unit Weights.

## CELdek® EVAPORATIVE MEDIA

The Sterling Evaporative Cooler utilizes high efficiency CELdek® media. CELdek® is made from a special cellulose paper, impregnated with insoluble anti-rot salts and rigidifying saturants. The cross fluted design of the pads induces highly-turbulent mixing of air and water for optimum heat and moisture transfer. Sterling Evaporative coolers utilize 8 in. CELdek® as standard equipment. Optional 12 in. CELdek®, 8 in. and 12 in. GLASdek® are also available. A 2" distribution pad is used to disperse water evenly over the media.



EVAPORATIVE COOLER EFFICIENCY/A.P.D. CHART



# Indoor Make-Up Air Handler Products Specification Guide

## A. General

### A.1 Standards & Certifications

All units must be:

- A.1.a** CSA International Certified duct furnace(s) which conform to the latest ANSI standards for efficiency and safe performance.
- A.1.b** Electrical safety is in compliance with UL 1995 safety standard for heating, ventilating and cooling equipment.
- A.1.c** Compliant with FM (Factory Mutual) requirements.
- A.1.d** (opt.) Compliant with IRI (Industrial Risk Insurers) requirements. (Include 100% shut-off type (lockout) ignition system, and mechanically exhaust (power vent) products of combustion).

### A.2 Fuel Types

Indoor unit will be suitable for operation with:  
(a) Natural Gas.  
(b) LP (propane) Gas.

### A.3 Mechanical Arrangement

Indoor unit will consist of a:

- A.3.a** Furnace section consisting of a:
  - (a) Single Furnace (100-400 MBh units)
  - (b) Dual Furnace (500-800 MBh units)
  - (c) Triple Furnace (1200 MBh units)The firing rate of each furnace will not exceed 400 MBh and will contain its own Heat Exchanger, Draft Diverter/Flue Collector, Venting, Burners, Safety and Ignition Controls.
- A.3.b** Blower Section containing supply blower(s) and blower motor. The blower motor will be interlocked electrically and disengage the blower motor and control circuit upon opening the service panel.
- A.3.c** Electrical Cabinet that is isolated from the air stream with a non removable access panel interior to the outer service panel. Provision for component mounting, wire routing and high voltage isolation.
- A.3.d** Indoor unit will be provided with:
  - (a) Outside air and Return air opposed blade dampers.
  - (b) Outside air opposed blade dampers.
  - (c) Return air opposed blade dampers.
  - (d) No dampers.
- A.3.e** Filter Section will accommodate 1 or 2 inch washable, or pleated high-efficiency filters; or 2 inch throwaway and be of a V-bank design for minimal pressure drop.
- A.3.g** Return air will enter through a bottom return air opening. An optional horizontal return air configuration is available.
- A.3.h** A Cooling Coil Section constructed of galvanized steel may be provided with the unit.
- A.3.h.1** Direct Expansion (DX) Evaporator Coil certified by ARI may be provided.
- A.3.h.2** Chilled Water Coil certified by ARI will be provided.
- A.3.i** An Evaporative Cooler with 8 inch media may be provided. The Evap. cooler will be of a self cleaning design with a stainless steel water tank, regulated water flow and overflow protection. The cooler will have a cabinet assembly of heavy-gauge aluminized steel with weatherproof finish, a U.L. recognized thermally protected sealed recirculating pump motor, two inch distribution pad, and corrosion resistant PVC water distribution tubes. CELdek® or GLASdek® media is available.
- A.3.i.1** (opt.) An automatic Fill and Drain Kit may be provided for field installation.
- A.3.i.2** (opt.) High-Efficiency 12 inch deep media may be provided.

### A.4 Electrical Systems

- A.4.a** All electrical components and fixtures will carry UL or ETL and/or CSA listing, certification and/or recognition.
- A.4.b** All wire will be rated to meet or exceed electrical requirements for voltage, ampacity, dielectric strength of sheathing and temperature rating per location.

- A.4.c** Standard control relays will be socket mounted with terminal block connections.
- A.4.d** All high voltage wiring is enclosed in flexible metallic sheathed BX cable and include an identifying marker corresponding to the wiring diagram.
- A.4.e** All control wiring will terminate at terminal strips (single point connection) and include an identifying marker corresponding to the wiring diagram.

### A.5 Mounting

Indoor unit will be mounted on metal rails with lifting and anchor holes and be suitable for slab or suspension mounting.

**Additional Field Furnished Supports are required for unit arrangement lengths longer than 104 inches that are to be suspended.**

### A.6 Standard Safety Provisions

- A.6.a** Indoor unit is provided with a low voltage circuit breaker rated for 150% of the unit's normal 24 volt operating load.
- A.6.b** An access interlock switch is installed in the blower compartment and will disengage the blower upon removing the service panel. An override or cheat switch shall be incorporated into the interlock switch for serviceability.
- A.6.c** Each duct furnace will be provided with a primary limit switch 24V high temperature limit switch and a (redundant) combination gas valve.
- A.6.d** Indoor units will contain a Reverse Air Flow Interlock Switch. The normally closed switch when activated will cause gas valves to close.
- A.6.e** A Drafter Prove switch is installed in all power vented units and disengage gas flow if for any reason the drafter has failed to operate.
- A.6.f** Warning labels will be visible in accessible areas of the rooftop where unsafe conditions could occur.

### A.7 Optional Safety Provisions (opt.)

- A.7.a** A high pressure interlock switch and shutoff valve will be provided for each furnace section.
- A.7.b** A low pressure interlock switch and shutoff valve will be provided for each furnace section.
- A.7.c** A flame fault indicator relay will be provided for each duct furnace with provision for remote indicator connection.
- A.7.d** Indoor unit will be provided with a Firestat located in the return air stream. If the return air temperature reaches the set point (typically 130°F) the unit will close all gas valves, return dampers to their normal position and shut down the blower.
- A.7.e** Indoor unit will be provided with a Firestat located in the supply air stream. If the supply air temperature reaches the set point (typically 150°F) the unit will close all gas valves, return dampers to their normal position and shut down the blower.
- A.7.f** Indoor unit will be provided with a Time Delay Freezestat with the sensing bulb located in the discharge air stream. Wired as an interlock to prevent cold air discharge.
- A.7.g** Indoor unit will be provided with a manually reset high limit switch wired in series to the lead furnace high limit. If the set point is reached the gas valve will close and the blower will continue to run until the sensed temperature is below the set point.
- A.7.h** A Clogged Filter Pressure Switch with adjustable operating range and normally open switch will be installed to sense increased suction pressure by the blower due to filter obstruction. Provision for remote indication will be provided by terminal block connection points.
- A.7.i** Indoor unit will be provided with an Ambient Lockout Thermostat and wired as an interlock to prevent duct furnace(s) from firing during times of mild ambient temperatures.

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## B. Burners

- B.1** Burners will be die formed with stamped porting and stainless steel port protectors to prevent scale or foreign matter from obstructing the burner ports. Burner construction will consist of:
  - (std.) Corrosion Resistant Aluminized Steel.
  - (opt.) Type 409 Stainless Steel.
- B.2** Burners must be individually removable for ease of cleaning and servicing. The entire burner assembly must be easily removable with a slide-out drawer design. The pilot must be accessible through a pilot access plate without removing the burner assembly.
- B.3** (opt.) Burners will be fitted with orifices suitable for higher elevations.(over 2000 feet)

## C. Heat Exchanger

The Heat Exchanger construction will consist of:

- (std.) 20 gauge aluminized steel tubes, and 18 gauge aluminized steel headers.
- (opt.) 20 gauge 409 stainless steel tubes, and 20 gauge headers.
- (opt.) 20 gauge 321 stainless steel tubes, and 20 gauge headers.

## D. Venting System

- D.1** The Flue Collector construction will consist of:
  - (std.) Corrosion resistant aluminized steel.
  - (opt.) Type 409 stainless steel.
- D.2** Two types of venting available: MU units are naturally vented; ME and MS units are power vented.

## E. Drip Pan (MU and ME only)

The Positive Drain Drip Pan construction will consist of:

- (opt.) Type 409 stainless steel.
- (std.) Corrosion resistant aluminized steel

## F. Cabinetry

- F.1** Cabinetry will be die-formed, 18 gauge Galvanized steel and finished in air-dry enamel.
- F.2** Service and access panels will be provided through easily removable side access panels with captive fasteners.
- F.3** Filter, Damper and Blower sections and cooling coil section will be insulated with fire resistant, environmentally safe, odorless, one-inch fiber material.
  - (std.) Matte Faced.

## G. Dampers

Dampers will be of the opposed blade type, constructed of galvanized steel with neoprene nylon bushings, blades to be mechanically interlocked.

- (opt.) Leak Proof Damper (outside air only) will be of the opposed blade type, constructed of galvanized steel with neoprene nylon bushings and vinyl blade edge seals; blades to be mechanically interlocked.

## H. Filter Rack

Filter Rack will be constructed of galvanized steel with access through the side service panel.

## I. Intake Hood (optional) (shipped separately)

Intake hood will be constructed of galvanized steel and include a:

- (std.) bird screen.
- (opt.) moisture eliminator; will be shipped separate from unit.

## J. Supply Blower

Supply Blower will be belt driven, forward curved, centrifugal type blower assembly, statically and dynamically balanced with double inlet. The blower wheel will be fixed on a shaft, supported with super quiet rubber cartridges for vibration isolation, and ball bearing.

## K. Blower Motor

### K.1 Type

- K.1.a** Motor will be Single Speed, Ball Bearing Drive, Permanently Lubricated, EPACT compliant, Standard NEMA Frame Size and Service Factor, with Resilient Base and Class "B" Windings:
  - (std.) Open Drip Proof
  - (opt.) Totally Enclosed
  - (opt.) Premium Efficiency
  - (opt.) Two Speed
- K.1.b** Motor will operate at:
  - (a) 115V/1/60
  - (b) 230V/1/60
  - (c) 208V/3/60
  - (d) 230V/3/60
  - (e) 460V/3/60
  - (f) 575V/3/60
- K.1.c** Motor will have a horse power rating of: (1/2 - 15 HP)
- K.2** Motor wiring will be enclosed in flexible metallic sheathed BX conduit.
- K.3** Control Motor will be activated through a:
  - (a) Relay. (std. 1/2 - 1 HP)
  - (b) Contactor. (std. 1-1/2 - 5 HP)
  - (c) Magnetic starter. (std. 7-1/2 - 15 HP)
- K.4** Motor Protection will be provided with:
  - (a) Internal thermal protection. (Relay/Contactor actuated)
  - (b) IEC overload protection. (Magnetic starter)

## L. Gas and Ignition Systems

### L.1 Ignition System

A solid state ignition control system which ignites the pilot by spark during each cycle of operation will be provided. When pilot flame is proven, main burner valve will open to allow gas flow to burners. Pilot and burners must be extinguished during the off cycle.

(opt.) Ignition system will be 100% shutoff type.

### L.2 Valve

Indoor units will be provided with a gas valve suitable for NEC Class 2 use, for a maximum inlet of 0.5-psi (14 inch W.C.) on natural gas. The 24 volt combination automatic gas valves must include a main operating valve, pilot safety valve, pressure regulator, manual main and pilot shutoff valve and adjustable pilot valve.

(opt.) Unit will be provided with a high pressure gas regulator valve.

## M. Gas Controls

- (a std.) **Single Stage** unit will be provided with one stage of heat. Ignition is the full rate of the furnace's rated input.
- (b) **Two Stage** unit will be provided with two stages of heat. Ignition will be at low fire (one half) of the rated input.
- (c) **Electronic Modulating Gas** Unit will be provided with modulated heat output. An automatic valve in series with the modulating valve will be provided to cycle the unit. Ignition will be at full fire (100 percent rated input) and modulate the gas input from 100 to 50 percent rated input. The Modulating Gas valve will operate in response to:
  - (1) Room Thermostat
  - (2) Duct Thermostat with remote temperature adjustment.
  - (3) Duct Thermostat with remote temperature adjustment and an override room thermostat which will increase the rate of modulated input to the unit in proportion to the difference in room temperature.

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- (f) **Electronic Modulating Gas DDC** Unit will be provided with modulated heat output. An automatic valve in series with the modulating valve will be provided to cycle the unit. Ignition will be at full fire (100 percent rated input) and modulate the gas input from 100 to 50 percent of the rated input. The modulating gas valve will operate in response to a 4-20 mA input from an external DDC control.
- (g) **Electronic Modulating Gas DDC** Unit will be provided with modulated heat output. An automatic valve in series with the modulating valve will be provided to cycle the unit. Ignition will be at full fire (100 percent rated input) and modulate the gas input from 100 to 50 percent of the rated input. The modulating gas valve will operate in response to a 0-10 VDC input from an external DDC control.
- (h) **Three Stage.** (Triple Furnace Units) Unit will be provided with one stage of heat per furnace. Ignition will be determined by an Electronic Step Control. Each stage of fire will have no less than a 4 degree F temperature differential setting. The unit will fire at one third (33 percent) of the rooftop unit's rated input per stage. Furnace One will always fire first and disengage last.
- (i) **Four Stage** Unit will be provided with two stages of heat per furnace. Ignition will be determined by an Electronic Step Control. Each stage of fire will have no less than a 4 degree F temperature differential setting. The unit will fire at one quarter (25 percent) of the rooftop unit's rated input per stage. Furnace One will always fire first and disengage last.
- (j) **Six Stage** (Triple Furnace Units) Unit will be provided with two stages of heat per furnace. Ignition will be determined by an Electronic Step Control. Each stage of fire will have no less than a 4 degree F temperature differential setting. The unit will fire at one sixth (16.5 percent) of the rooftop unit's rated input per stage. Furnace One will always fire first and disengage last.
- (k) **One Stage with Electronic Modulation DDC** (Dual Furnace Units) Unit will be provided with modulated heat output on furnace one and one stage of heat on furnace two. Ignition will be determined by an Electronic Step Control. Each stage of fire will have no less than a 4 degree F temperature differential setting. The rooftop unit will fire at approximately one half (50 percent) of the rooftop unit's rated input and modulate from 50 - 25 percent fire on furnace one. Additional stages of fire will engage as the 50 percent of fire has been maintained for the duration of a delay setting at the electronic step control with respect to each set point. Furnace One will always fire first and disengage last.
- (l) **Two Stage with Electronic Modulation DDC** (Triple Furnace Units) Unit will be provided with modulated heat output on furnace one and one stage of heat on furnace two and three. Ignition will be determined by an Electronic Step Control. Each stage of fire will have no less than a 4 degree F temperature differential setting. The rooftop unit will fire at approximately one third (33 percent) of the rooftop unit's rated input and modulate from 33 - 16.5 percent fire on furnace one. Additional stages of fire will engage as the 33 percent of fire has been maintained for the duration of a delay setting at the electronic step control with respect to each set point. Furnace One will always fire first and disengage last.

## N. Damper Motor

### N.1 Type

- N.1.a** Damper motor will be:
  - (a) Two position with spring return.
  - (b) Modulating.
  - (c) Modulating with spring return.

**N.1.b** Motor will operate at 24 volts.

### N.2 Wiring

Motor and control wiring will be harnessed with terminal block connections. Wire will have a temperature rating of at least 105 deg. C outside of the duct furnace. The wire contained within the duct furnace(s) will have a temperature rating of at least 200 deg. C.

## O. Damper Control

- (a) Two position spring return motor with outside air damper will be provided. The motor will power the outside air damper full open when the unit is on and full closed when the unit is off.
- (b) Two position spring return motor with return air damper will be provided. The motor will power the return air damper full open when the unit is on and full closed when the unit is off.
- (c) Two position spring return motor with interlocked outside and return air dampers will be provided. The motor will power either the outside air damper full open and the return air damper full closed or the outside air damper full closed and the return air damper full open in response to an outside air temperature sensor. When the unit is off the motor will drive the outside air dampers full closed and the return air dampers full open.
- (d) Modulating motor with interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to a thermostatic controller located in the mixed air stream. Units will also be provided with a minimum position potentiometer for minimum outside air damper position.
- (e) Modulating motor with spring return and interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to a thermostatic controller located in the mixed air stream. Units will also be provided with a minimum position potentiometer for minimum outside air damper position. When the unit is off the motor will drive the outside air dampers full closed and the return air dampers full open.
- (f) Modulating motor with interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to a thermostatic controller located in the mixed air stream.
- (g) Modulating motor with spring return and interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to a thermostatic controller located in the mixed air stream. When the unit is off the motor will drive the outside air dampers full closed and the return air dampers full open.
- (h) Modulating motor with interlocked outside and return air dampers will be provided. The motor will position the outside and return air dampers in response to a manually set potentiometer.
- (i) Modulating motor with interlocked outside and return air dampers will be provided. The motor will position the outside and return air dampers in response to a manually set potentiometer. When the unit is off the motor will drive the outside air dampers full closed and the return air dampers full open.

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- (j) Modulating motor with interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to a thermostatic controller and dry bulb located in the mixed air stream. Units will also be provided with a minimum position potentiometer for minimum outside air damper position.
- (k) Modulating motor with spring return and interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to a thermostatic controller and dry bulb located in the mixed air stream. Units will also be provided with a minimum position potentiometer for minimum outside air damper position. When the unit is off the motor will drive the outside air dampers full closed and the return air dampers full open.
- (l) Modulating motor with spring return and interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to an enthalpy controlled economizer. When the unit is off the motor will drive the outside air dampers full closed and the return air dampers full open.
- (m) Modulating motor and interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to a pressure sensor located in the building.
- (n) Modulating motor with spring return and interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to a carbon dioxide (CO<sub>2</sub>) monitor located in the return air duct. When the unit is off the motor will drive the outside air dampers full closed and the return air dampers full open. Alarm contacts will be provided to guard against sustained high CO<sub>2</sub> levels.
- (o) Modulating motor with spring return and interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to a solid state mixed air sensor and S-350 proportional controller. When the unit is off the motor will drive the outside air dampers full closed and the return air dampers full open.
- (p) Modulating motor and interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to a 4-20 mA or 0-10 VDC analog signal supplied by an external DDC controller.
- (q) Modulating motor with spring return and interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to a 4-20 mA or 0-10 VDC analog signal supplied by an external DDC controller. When the unit is off the motor will drive the outside air dampers full closed and the return air dampers full open.
- (r) Two position spring return motor with interlocked outside and return air dampers will be provided. The motor will power the outside air damper full open after a warm up period determined by a minimum supply air temperature sensor when the unit is on, and full closed when the unit is off.(ASHRAE Cycle I)
- (s) Modulating motor with interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to a thermostatic controller located in the mixed air stream after a warm up period determined by a minimum supply air temperature sensor. Units will also be provided with a minimum position potentiometer for minimum outside air damper position. (ASHRAE Cycle II)

- (t) Modulating motor with spring return and interlocked outside and return air dampers will be provided. The motor will modulate the position of the outside and return air dampers in response to a thermostatic controller located in the mixed air stream after a warm up period determined by a minimum supply air temperature sensor. Units will also be provided with a minimum position potentiometer for minimum outside air damper position. When the unit is off the motor will drive the outside air dampers full closed and the return air dampers full open.(ASHRAE Cycle III)
- (u) Manual outside and return air dampers with manual quadrant will be provided.

## P. Accessories

- (a) **Moisture Eliminators.** Moisture eliminators will be provided by the manufacturer to eliminate the possibility of moisture carryover entering the unit through the outside air hood. A differential pressure switch and indicator light will be provided in case of blockage
- (b) **Horizontal Rear Return.** Return air will be located horizontally on the rear of the unit under the outside air inlet. Moisture eliminators will be provided by the manufacturer for the outside air hood.
- (c) **Low Leak Dampers.** Low leak dampers with vinyl blade edge seams and neoprene nylon bushings will be provided by the manufacturer. Dampers will be of the galvanized steel opposed blade type.
- (d) **409 Stainless Steel Drip Pan (MU and ME only).** Will be provide by the manufacturer in the furnace section.
- (e) **High Altitude Unit.** Unit will be orificed for operation at \_\_\_\_\_ feet above sealevel elevation. 2 stage units will include a factory installed delay timer allowing the unit to initially fire at 100% for 10 seconds and then operate under the direction of the gas valve controller.
- (f) **High Pressure Regulator.** Will be provided by the manufacturer to reduce the incoming gas pressure to 6 inches of water column.
- (g) **Input Derate.** Unit will be derate \_\_\_\_\_ % of rated input.
- (h) **Filters.** Will consist of
  - e.1 1 inch Washable Standard
  - e.2 2 inch Washable (Optional)
  - e.3 2 inch Throwaway (Optional)
  - e.4 1 inch 30% Pleated (Optional)
  - e.5 2 inch 30% Pleated (Optional)
- (i) Evaporative Cooler Accessories will include.
  - f.1 **Fill and Drain Kit.** Will consist of a 3 way valve and relay for automatic fill and drain operation of the Evaporative Cooler.
  - f.2 **12 inch Celdek® Media.** High Efficiency 12 inch Celdek ® Media will be utilized in the Evaporative cooler.
  - f.3 **Freezestat.** An automatic reset freezestat will be provided by the manufacturer to control the operation of the fill and drain kit.
  - f.4 **8 inch Glasdek ®.** Will be provided by the manufacturer to conform with UL900 Class II fire rating requirements
  - f.5 **12 inch Glasdek ®.** Will be provided by the manufacturer to conform with UL900 Class II fire rating requirements
- (j) **7 Day Time Clock.** A 7 day time clock will be provided by the manufacturer and offer SPDT relay output and a maximum of 6 set points per day.
- (k) **24 Hour Time Clock.** A24 hour time clock will be provided by the manufacturer and offer SPDT relay output and a maximum of 12 set points per day.

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- (l) **Clogged Filter Switch.** A factory installed clogged filter switch with indicator light located in the main electrical cabinet or remote control panel (when specified) will be provided by the manufacturer.
- (m) **Convenience Outlet.** A GFI manual reset convenience outlet with weather proof enclosure will be provided by the manufacturer and field installed and require a separate 115 volt service.
- (n) **Remote Control Panel.** A wall mounted "Sterling" design control panel will be provided by the manufacturer. The panel will consist of a non metallic enclosure and 6 LED status lamps. The lamps will indicate System on/off, Fan on/off, Heat on/off, Cool on/off, Auxiliary on/off (Evaporative cooler on/off or Exhaust fan operation) and modulating damper control (when specified)
- (o) **Manual Blower Switch.** A factory installed manual blower switch located in the electrical cabinet will be provided by the manufacturer.
- (p) **Duct Thermostats**
  - q.1 single stage duct thermostat with an operating range of 55-175 ° F and SPDT operation will be provided by the manufacturer.
  - q.2 two stage duct thermostat with an operating range of 55-175 ° F and SPDT operation will be provided by the manufacturer.
- (q) **Room Thermostats**
  - r.1 **T87F Honeywell Thermostat w/ Subbase.** A single stage heating and subbase for fan on operation will be provided by the manufacturer.
  - r.2 **T87F Honeywell Thermostat w/ Subbase and Guard.** A single stage heating thermostat including a subbase for fan operation and tamper proof guard will be provided by the manufacturer.
  - r.3 **T834H Thermostat with Subbase.** A single stage heating thermostat with fan switch with a 55-95° F operating range will be provided by the manufacturer.
  - r.4 **T7300 Programmable Commercial Thermostat.** The manufacturer will provide a 7 day programmable thermostat capable of 2 stages of heating and 2 stages of cooling.
  - r.5 **T874 Two Stage Thermostat.** The manufacturer will provide a 2 stage heating and 2 stage cooling thermostat with system and fan switching and built in 12° F heating / cooling differential.
  - r.6 **TG511 Locking Thermostat Cover.** A Universal locking thermostat cover. Will be provided by the manufacturer.
- (r) **Return Firestat.** A return firestat with a setpoint range of 110° - 290° F and SPDT switching capabilities will be provided by the manufacturer.
- (s) **Supply Firestat.** A supply firestat with a setpoint range of 110° - 290° F and SPDT switching capabilities will be provided by the manufacturer.
- (t) **Time Delay Freezestat.** A SPDT time delay freezestat with a setpoint range of 30° - 58° F and a 1 to 5 minute adjustable time delay will be provided by the manufacturer.
- (u) **Ambient Lockout.** A factory mounted ambient lockout control capable of disengaging the duct furnace during times of mild temperatures will be provided by the manufacturer.
- (v) **Interlock Relays.**
  - w.1 **24 volt DPDT relay.** A 24 volt type 2 Form c relay with 24 volt coil and DPDT 10 amp contacts will be provided by the manufacturer. The relay will be capable of plugging into the main connection PC board and will be utilized as an exhaust fan interlock.
  - w.2 **24/115 volt SPDT relay.** A relay with selectable coil voltages of 24 or 115 and SPDT 10 amp contacts will be provided by the manufacturer.
  - w.3 **24/115/230 volt DPST relay.** A relay with selectable coil voltages of 24, 115 or 230 and DPDT 10 amp contacts will be provided by the manufacturer.
  - w.4 **24 volt 4PDT relay.** A relay with a coil voltage of 24 and 4PDT 10 amp contacts will be provided by the manufacturer.
- (w) **Manual Reset High Limit Switch.** Will be provided by the manufacturer to disengage the furnace at a temperature of 200° F. The switch will be of the non-recycling manual reset type.
- (x) **High / Low Gas Pressure Switches.** Will be provide by the manufacturer to disengage the furnace(s) upon detection of high manifold or low incoming line pressures.
- (y) **Status Lamps.** Long life factory installed LED lamps will be provided in the electrical cabinet by the manufacturer to aid in troubleshooting and equipment setup. Power on, Fan on, Heating energized at furnace one, two or three and cooling energized will be provided when applicable.
- (z) **Air Flow Prove Switch.** Will be provided by the manufacturer to verify airflow through the unit. The switch will be a Dwyer 1910-0 pressure switch suitable for duct mounting with a range of .15 – .50 inches W.C.
- (aa) **Field Installed Disconnect Switches.**
  - bb.1 30 amp fused disconnect switch will be provided by the manufacturer to be field mounted.
  - bb.2 30 amp non fused disconnect switch will be provided by the manufacturer to be field mounted.
  - bb.3 60 amp fused disconnect switch will be provided by the manufacturer to be field mounted.
  - bb.4 60 amp non fused disconnect switch will be provided by the manufacturer to be field mounted.
- (bb) **Hinged Access Doors.** Will be provided by the manufacturer on the blower and filter cabinet doors. Doors will be double wall construction and incorporate dual quick opening tool-less latches. Doors stops will be included to prevent against closure while open.
- (cc) **Service Convenience Package.** Will be factory installed by the manufacturer The service convenience package will consist of a factory mounted switch type disconnect and GFI convenience outlet mounted on a hinged access door. Hinged access doors will be double wall construction and incorporate dual quick opening tool-less latches. Doors stops will be included to prevent against closure while open
- (dd) **Double Wall Cabinet Construction.** Will be factory installed and in accordance with the ASHRAE standard no. 62.1-2004. Double wall construction will be utilized in the Blower, Filtration and Coil sections of the unit were applicable. 1" fiber material will be used between the cabinet walls for insulation purposes.

# Unit Selection Procedure

## Selection Procedure

### Step 1

To properly select a unit, two of the three following items must be known - Temperature Rise (TR) required, Cubic Feet per Minute of air delivery (CFM) required, Output (BTU\H OUT) required. From any two of these items the third item can be determined, as well as the Input (BTU/H IN) required as follows. (The value 1.085 represents a constant.)

$$TR = BTU/H \text{ Out} \div (1.085 \times CFM)$$

$$CFM = BTU/H \div (1.085 \times TR)$$

$$BTU/H \text{ Out} = (CFM \times 1.085) \times TR$$

$$BTU/H \text{ In} = BTU/H \text{ out} \div \text{Efficiency} .80$$

With any two of the three required values, match these requirements to a unit with the nearest Input (BTU/H), Temperature Rise (TR) and Air Flow (CFM) capabilities keeping in mind that -

$$BTU/H \text{ OUT} = BTU/H \text{ IN} \times \text{Efficiency}.$$

Refer to the "Packaged Indoor Arrangement Reference" Catalog page 9 to match a Capacity range (BTU/H), Air Delivery (CFM) and Temperature Rise (TR) with a Indoor Arrangement and proceed to the Chart and Tables listed for that arrangement.

The top portion of Charts 1 and 2 allows the use of Temperature Rise and CFM to determine Capacity, or Temperature Rise and Capacity to determine CFM, or Capacity and CFM to determine Temperature Rise. Follow the top chart down to the corresponding filter and cooling range for the selection.

### Step 2

Once Capacity, Temperature Rise and CFM have been determined, go to the Accessory Pressure Losses Table for the arrangement and calculate pressure losses for unit accessories. Add the losses for Filters, Dampers, Rainhood with Screen or Moisture Eliminators (if used at ductwork inlet), Evaporative Cooler or Cooling Coil and losses due to Duct Work (External Static Pressure) to determine the Total External Pressure.

### Step 3A 2000 ft. altitude and below

Refer to the Performance Table for the selection and determine RPM and BHP for the Total External Pressure. Go to the table row that most closely matches unit Capacity, Temperature Rise and CFM, follow the row out to the column that equals the Total External pressure for RPM and BHP values.

### Step 3B Above 2000 ft. altitude

To correct for Altitude, go to Table 12 Correction Factors for Altitude. From Table 12 determine the correction factor from Temperature and Altitude for the system. Correct the ESP from Duct Work to actual ESP for altitude then add SP from accessories as shown below. Refer to the Performance Table for the selected unit. Go to the row that most closely matches unit Capacity, Temperature Rise and CFM, follow the row out to the column that equals the corrected Total External Pressure for RPM and BHP values. The BHP value can now be corrected to Actual BHP for altitude as shown below.

$$\text{Total External Pressure} = \text{Duct ESP} \times \text{Factor} + \text{Accs. SP}$$

$$\text{Actual BHP} = \text{Cat. BHP} \div \text{Factor}$$

$$\text{Corrected BTU/HR. Input} = \text{Catalog BTU/HR. Input} \div \text{Factor}$$

$$\text{Corrected BTU/HR. Output} = \text{Catalog BTU/HR. Input} \times \text{Efficiency}$$

**Table 12. Correction Factors for Altitude**

Temp F	Altitude (Feet) and Barometric Pressure ("In. Hg")							
	Altitude BP	0'	500'	1000'	1500'	2000'	2500'	3000'
-40		0.79	0.81	0.82	0.84	0.85	0.87	0.88
0		0.87	0.88	0.90	0.92	0.93	0.95	0.97
40		0.94	0.96	0.98	1.00	1.01	1.03	1.05
70		1.00	1.02	1.04	1.06	1.08	1.10	1.12
80		1.02	1.04	1.06	1.08	1.10	1.12	1.14
100		1.06	1.08	1.10	1.12	1.14	1.16	1.18
120		1.90	1.11	1.13	1.16	1.18	1.20	1.22

Temp F	Altitude BP	3500'	4000'	4500'	5000'	5500'	6000'
		26.32	25.84	25.36	24.9	24.43	23.98
-40		0.90	0.92	0.93	0.95	0.97	0.99
0		0.99	1.00	1.02	1.04	1.06	1.08
40		1.07	1.09	1.11	1.13	1.16	1.18
70		1.14	1.16	1.18	1.20	1.22	1.25
80		1.16	1.18	1.20	1.22	1.25	1.27
100		1.20	1.22	1.25	1.27	1.29	1.32
120		1.24	1.27	1.29	1.31	1.34	1.37

# Cooling Coil Selection Procedure

## Cooling Coils

Cooling coils are used in air handling systems to cool and dehumidify an air stream for comfort purposes. To reduce the cooling load in buildings, most applications recirculate a large percentage of the air. Usually recirculated air is 75-80% of the airflow with the remainder being outside fresh air. Some codes require 100% outside air, particularly for hospitals and schools. Also many engineers specify higher percentages of outside air to meet the requirements of ASHRAE Standard 62.1-2004 "Ventilation for Acceptable Indoor Air Quality".

**A.** In order to select the least expensive coil to meet the specified performance criteria the following information is required:

- Unit Size
- Airflow in SCFM or ACFM and Altitude. (see "Fan Selection at Altitude")
- Entering air Dry Bulb and Wet Bulb temperatures based on ratio of outside to return air.
- Cooling load MBH (1000's BTU/Hr) or leaving air Wet Bulb.

**B.** For chilled water coils the following additional information is required:

- Fluid type: water, ethylene glycol, propylene glycol and percent of mixture.
- Entering fluid temperature °F.
- Leaving fluid temperature °F or rate of flow GPM.  
Chilled water catalog tables are based on:  
45°F entering water temperature.  
Entering air temperature of 80° F DB / 67° F WB.  
Data is certified in accordance with ARI Standard 410. (Capacities based on 95° F DB/74° F WB information is also shown - see tables 11A and 11B)  
For other than these conditions, please consult the factory.

**C.** For DX (refrigerant) coils, the following additional information is required (refer to tables 10A and 10B).

- Refrigerant type.
- Suction temperature °F.
- Liquid temperature °F.
- Type of circuiting desired.
- Hot gas bypass required?  
DX catalog tables are based on:  
45° F suction temperature.  
Entering air temperature of 80° F DB / 67° F WB.  
R-22 refrigerant.  
100° F liquid temperature.  
Data is certified in accordance with ARI Standard 410. For other than these conditions see Table 10B or please consult the factory.

**D.** When specifying a coil one of the most important pieces of information is the airflow in SCFM. As stated in the "Fan Selection at Altitude" section SCFM means STANDARD CFM or air at a density of 0.075 lb./cu. ft. A fan must be selected using ACFM or ACTUAL CFM. A cooling coil or heating coil must be selected using SCFM. Up to an altitude of approx. 1,500 feet above sea level very little error would be introduced in the selection of a cooling coil. For altitudes above 1,500 feet above sea level the coil must be selected using SCFM. The relationship between ACFM and SCFM is shown by the following equation.  
SCFM = ACFM X (Actual Density ÷ 0.075)

The term "0.075 ÷ Actual Density" is referred to as the density correction factor, here in called the "Factor". This factor can be found in Table 12. The aforementioned equation can then be re-written as:

$$\text{SCFM} = (\text{ACFM} \div \text{Factor})$$

Example: A cooling coil must be selected at 5,000 ft. altitude. The unit delivers 10,000 ACFM. What is the SCFM? At 5,000 ft. altitude, the factor from Table 12 is 1.20 therefore:

$$\text{SCFM} = 10,000 \text{ ACFM} \div 1.20 = 8,333 \text{ SCFM}$$

**E.** The entering air temperatures, both wet bulb and dry bulb must also be considered when selecting a coil. A majority of units usually use recirculated air with a percentage of outside air. The cooling coil must be selected using the mixed air temperature entering the coil.

The following example shows how to calculate the mixed air temperature.

25% Outside air at 95° F DB / 75° F WB  
75% recirculated air at 78° F DB / 67° F WB

The mixed dry bulb is simply the proportional value between the outside and recirculated dry bulb temperatures.

$$(.25 \times 95) + (.75 \times 78) = 82.3^\circ \text{ F}$$

The mixed wet bulb temperatures must be calculated using either the humidity ratio from a psychrometric chart or from Table 13 "The enthalpy of saturated air at various wet bulb temperatures".

Using Table 13, the enthalpy of the outside air at 75° F WB is 38.62 BTU/lb. and the recirculated air at 67° F WB is 31.63 BTU/lb.; the mixed enthalpy is:

$$(.25 \times 38.62) + (.75 \times 31.63) = 33.38 \text{ BTU/lb.}$$

Using this value in Table 13, the interpolated wet bulb temperature is 69.1° F. Therefore, the final mixed temperatures are:

$$82.3^\circ \text{ F DB} / 69.1^\circ \text{ F WB}$$

**Table 13**  
Enthalpy of Saturated Air at  
Various Wet Bulb Temperatures

Wet Bulb Temp.	BTU per Pound	Wet Bulb Temp.	BTU per Pound	Wet Bulb Temp.	BTU per Pound
50.0	20.38	60.0	26.41	70.0	34.13
50.5	20.64	60.5	26.75	70.5	34.56
51.0	20.91	61.0	27.10	71.0	34.99
51.5	21.18	61.5	27.46	71.5	35.43
52.0	21.45	62.0	27.82	72.0	35.87
52.5	21.73	62.5	28.18	72.5	36.32
53.0	22.01	63.0	28.55	73.0	36.77
53.5	22.30	63.5	28.92	73.5	37.23
54.0	22.59	64.0	29.29	74.0	37.69
54.5	22.89	64.5	29.67	74.5	38.15
55.0	23.18	65.0	30.06	75.0	38.62
55.5	23.49	65.5	30.44	75.5	39.09
56.0	23.80	66.0	30.84	76.0	39.57
56.5	24.11	66.5	31.23	76.5	40.05
57.0	24.42	67.0	31.63	77.0	40.53
57.5	24.74	67.5	32.04	77.5	41.02
58.0	25.07	68.0	32.45	78.0	41.52
58.5	25.40	68.5	32.86	78.5	42.01
59.0	25.73	69.0	33.28	79.0	42.52
59.5	26.07	69.5	33.70	79.5	43.02



# Unit Net and Ship Weights — Table 14

**NOTE: ALL UNIT WEIGHTS ARE LESS MOTOR, OUTSIDE AIR HOOD (SHIPPED SEPARATELY) AND COOLING COILS W/ DRAIN PAN**  
**For units ordered with optional double wall construction [Digit 16 (N6)], add an additional 10% of the base unit weight.**

INDOOR Arrangement [IA] "A"						INDOOR Arrangement [IA] "B"					
NET WT.		SHIP.WT.		NET WT.		SHIP.WT.		NET WT.		SHIP.WT.	
MS/MU-10	256	367	ME-10	262	373	MS/MU-10	576	742	ME-10	583	749
MS/MU-15	307	418	ME-15	298	409	MS/MU-15	627	793	ME-15	619	785
MS/MU-20	365	484	ME-20	356	475	MS/MU-20	740	916	ME-20	731	907
MS/MU-25	405	524	ME-25	395	514	MS/MU-25	781	957	ME-25	771	947
MS/MU-30	469	596	ME-30	455	582	MS/MU-30	907	1092	ME-30	893	1078
MS/MU-35	510	637	ME-35	495	622	MS/MU-35	958	1143	ME-35	943	1128
MS/MU-40	558	690	ME-40	543	675	MS/MU-40	1032	1222	ME-40	1018	1208
MS/MU-50	795	952	ME-50	777	934	MS/MU-50	1195	1423	ME-50	1175	1403
MS/MU-60	914	1081	ME-60	885	1052	MS/MU-60	1377	1616	ME-60	1349	1588
MS/MU-70	994	1161	ME-70	964	1131	MS/MU-70	1468	1707	ME-70	1438	1677
MS/MU-80	1087	1259	ME-80	1058	1230	MS/MU-80	1589	1833	ME-80	1561	1805
MS/MU-12	1617	1820	ME-12	1573	1776						

INDOOR Arrangement [IA] "D"						INDOOR Arrangement [IA] "G"					
NET WT.		SHIP.WT.		NET WT.		SHIP.WT.		NET WT.		SHIP.WT.	
MS/MU-10	705	904	ME-10	712	911	MS/MU-20	982	1206	ME-20	973	1197
MS/MU-15	757	956	ME-15	749	948	MS/MU-25	1025	1249	ME-25	1015	1239
MS/MU-20	893	1102	ME-20	884	1093	MS/MU-30	1218	1452	ME-30	1204	1438
MS/MU-25	935	1144	ME-25	925	1134	MS/MU-35	1261	1495	ME-35	1246	1480
MS/MU-30	1083	1301	ME-30	1069	1287	MS/MU-40	1343	1583	ME-40	1329	1569
MS/MU-35	1134	1352	ME-35	1119	1337	MS/MU-50	1427	1689	ME-50	1407	1669
MS/MU-40	1220	1443	ME-40	1206	1429	MS/MU-60	1677	1951	ME-60	1649	1923
MS/MU-50	1348	1595	ME-50	1328	1575	MS/MU-70	1759	2033	ME-70	1729	2003
MS/MU-60	1554	1812	ME-60	1526	1784	MS/MU-80	1886	2166	ME-80	1858	2138
MS/MU-70	1644	1902	ME-70	1614	1872	MS/MU-12	2420	2741	ME-12	2376	2697
MS/MU-80	1777	2040	ME-80	1749	2012						

INDOOR Arrangement [IA] "K"						OPTIONAL OUTSIDE AIR HOOD W/BIRD SCREEN Weight Adder (Shipped Separately)			
NET WT.		SHIP.WT.		NET WT.		Capacity [CA]		Wt.	
MS/MU-10	886	1137	ME-10	893	1144	10	43	40	63
MS/MU-15	937	1188	ME-15	929	1180	15	43	50	51
MS/MU-20	1132	1394	ME-20	1123	1385	20	51	60	59
MS/MU-25	1174	1436	ME-25	1164	1426	25	51	70	59
MS/MU-30	1385	1659	ME-30	1371	1645	30	59	80	63
MS/MU-35	1428	1702	ME-35	1413	1687	35	59	12	63
MS/MU-40	1519	1799	ME-40	1505	1785				
MS/MU-50	1614	1915	ME-50	1594	1934				
MS/MU-60	1881	2195	ME-60	1853	2207				
MS/MU-70	1964	2278	ME-70	1934	2288				
MS/MU-80	2099	2420	ME-80	2071	2432				

Motor Type MT	MOTOR SHIPPING WEIGHT ADDER									
	1, OPEN DRIP PROOF			1, OPEN DRIP PROOF			2, TOTALLY ENCLOSED			
SUPPLY VOLTAGE SV	1, 115/1/60	2, 208/1/60	3, 230/1/60	4, 208/3/60	5, 230/3/60	6, 460/3/60	7, 575/3/60	1, 115/1/60	2, 208/1/60	3, 230/1/60
MOTOR SIZE MS										
C,L	1 HP	15	32	32	41	41	41	40	32	32
D,M	1 1/2 HP	18	40	40	43	43	43	43	41	41
E,N	2 HP	19.4	41	41	49	49	49	49	70	54
G,P	3 HP	80	80	80	72	72	72	72	76	76
H,R	5 HP	-	-	-	76	76	76	89	88	88
S	7-1/2 HP	-	-	-	120	120	120	118	-	-
T	10 HP	-	-	-	141	141	141	141	-	-
U	15 HP	-	-	-	217	217	217	234	-	-



# Motor Electrical Data — Table 15

## FULL - LOAD CURRENT IN AMPERES

Open Drip Proof

Single Speed, 1800 RPM ODP

H.P.	115/1/60	208/1/60	230/1/60	208/3/60	230/3/60	460/3/60	575/3/60
0.5	9.8	5.4	4.9	2.2	2.0	1.0	0.8
0.8	13.8	7.6	6.9	3.1	2.8	1.4	1.1
1.0	16.0	8.8	8.0	4.0	3.6	1.8	1.4
1.5	20.0	11.0	10.0	5.7	5.2	2.6	2.1
2.0	24.0	13.2	12.0	7.5	6.8	3.4	2.7
3.0	34.0	18.7	17.0	10.6	9.6	4.8	3.9
5.0	56.0	30.8	28.0	16.7	15.2	7.6	6.1
7.5	-	-	-	24.2	22.0	11.0	9.0
10.0	-	-	-	30.8	28.0	14.0	11.0
15.0	-	-	-	46.2	42.0	21.0	17.0

### Premium Efficiency

Single Speed, 1800 RPM HE

H.P.	208/3/60	230/3/60	460/3/60	575/3/60
1.0	3.6	2.8	1.4	1.1
1.5	5.0	3.8	1.9	1.8
2.0	6.7	5.4	2.7	2.3
3.0	9.2	8.0	4.0	3.2
5.0	14.7	12.8	6.4	5.2
7.5	22.1	19.2	9.6	7.7
10.0	29.0	25.2	12.6	10.1
15.0	40.0	36.0	18.0	14.5

### Totally Enclosed Fan Cooled

Single Speed, 1800 RPM TEFC

H.P.	208/3/60	230/3/60	460/3/60	575/3/60
1.0	3.5	3.6	1.8	1.5
1.5	4.8	4.7	2.4	1.9
2.0	6.0	5.8	2.9	2.3
3.0	9.0	8.8	4.4	3.5
5.0	14.0	13.2	6.6	5.3
7.5	21.0	20.0	10.0	8.0
10.0	28.0	27.0	13.5	10.8
15.0	41.0	38.6	19.3	15.4

### Open Drip Proof

2 Speed 1 Winding, 1800/900 RPM

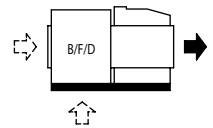
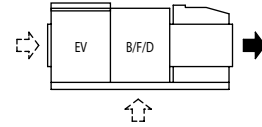
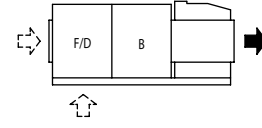
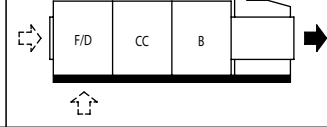
2 Speed 2 Winding, 1800/1200 RPM

HP.	208/3/60	230/3/60	460/3/60	HP.	208/3/60	230/3/60	460/3/60
1.0	3.3/1.5	3.2/1.4	1.6/0.7	1.0	3.4/2.1	3.2/2.0	1.5/1.0
1.5	5.0/2.2	4.8/2.0	2.4/1.0	1.5	5.0/2.6	4.8/2.9	2.3/1.3
2.0	6.5/2.9	6.3/2.6	3.2/1.3	2.0	6.5/3.6	6.3/3.5	3.0/1.7
3.0	9.0/3.4	8.0/3.3	3.8/1.6	3.0	9.3/4.9	8.5/4.6	4.6/2.7
5.0	15.0/6.2	14.0/6.0	6.8/2.8	5.0	14.5/7.3	13.0/7.0	6.5/4.0
7.5	21.0/7.5	19.5/7.5	10.0/4.0	7.5	20.0/11.0	19.0/10.0	10.5/5.5
10.0	29.0/9.6	25.0/9.3	12.0/4.3	10.0	27.0/14.0	25.0/12.5	13.5/7.2
15.0	42.0/18.0	38.0/14.0	18.0/6.0	15.0	45.5/27.5	41.0/23.0	20.5/11.5

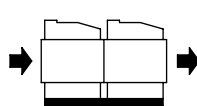
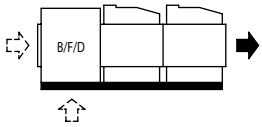
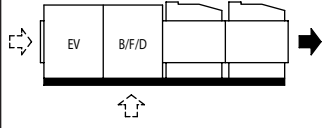
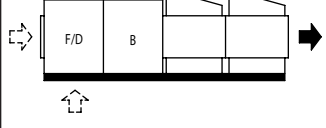
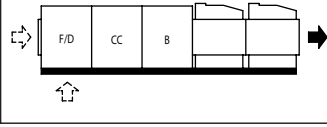
NOTES: Full Load Current for Motors is Based Upon The National Electrical Code 1993 Article - 430, Tables 148-150.  
 Full Load Current May Vary for Some Motors, Refer to the Motor Data Plate when Setting Over Current Protection Devices.  
 575 Volt Two Speed Motors Special Order.

# Unit Configurations/Submittal Index

## Single Furnace Units

	ME Unit Type (UT): MS MU	Submittal Number
IA "B" CA (10/40)		ME-40-B MS-40-B MU-40-B
IA "D" CA (10/40)		ME-40-D MS-40-D MU-40-D
IA "G" CA (20/40)		ME-40-G MS-40-G MU-40-G
IA "K" CA (10/40)		ME-40-K MS-40-K MU-40-K

## Dual Furnace Units

	ME Unit Type (UT): MS MU	Submittal Number
IA "A" CA (50/80)		ME-80-A MS-80-A MU-80-A
IA "B" CA (50/80)		ME-80-B MS-80-B MU-80-B
IA "D" CA (50/80)		ME-80-D MS-80-D MU-80-D
IA "G" CA (50/80)		ME-80-G MS-80-G MU-80-G
IA "K" CA (50/80)		ME-80-K MS-80-K MU-80-K

IA = Indoor Arrangement (Digit #7)

CA= Capacity (Digits #3 and #4)

Refer to Complete Model Number Designation  
in Catalog

### Legend:

B/F/D = Standard Blower/Filter/Damper Module

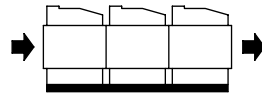
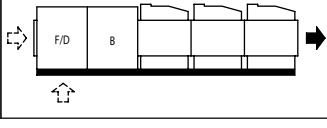
B = Hi CFM Blower Module

F/D = Hi CFM Filter/Damper Module

CC = Cooling Coil Module

EV = Evap. Cooler Module

## Triple Furnace Units

	ME Unit Type (UT): MS MU	Submittal Number
IA "A" CA (12)		ME-12-A MS-12-A MU-12-A
IA "G" CA (12)		ME-12-G MS-12-G MU-12-G

## Mestek

Mestek's corporate headquarters is located in Westfield, Massachusetts, the same location where Company operations began in 1946.

Mestek is a large and growing multidivisional Company that holds a leadership position in the residential and commercial building finned-tube heating equipment industry. It has become a major supplier of gas-fired heating equipment and is a leading manufacturer of fire, smoke, and air control dampers used in the HVAC systems of office buildings, hospitals, and schools. In addition, it is rapidly building toward a leadership position as a manufacturer of coil stock handling systems for the metal stamping and forming industries.

Mestek's products are built at eleven modern manufacturing facilities located in Maine, Massachusetts, Texas, Ohio, North Carolina, Georgia, California, Maryland, Pennsylvania, Connecticut and Michigan. A nationwide network of aggressive, experienced sales representatives, distributors, and wholesalers keep Mestek products flowing to the marketplace.

The Mestek products meet the stringent performance standards of CSA International, Underwriters Laboratory, ETL and other highly regarded industry associations. Building at this level of quality while paying attention to cost has consistently given Mestek products extra appeal in the marketplace.

The Company's representatives and wholesalers have been carefully selected to assure the highest possible level of product experience and knowhow. The competence and product knowledge of the headquarters staff is unmatched. Thus whatever the product or where ever you're located, specifying Mestek gives you the combination of top quality and complete technical support with the application of the product.

### SALES OFFICE:

**260 North Elm Street, Westfield, Mass. 01085**  
**(413) 564-5540 • Fax (413) 562-5311**  
**[www.sterlinghvac.com](http://www.sterlinghvac.com)**

### LIMITED WARRANTY

Unless otherwise specified, the following conversions may be used for calculating SI unit measurements:

1 cubic foot = 0.028 m<sup>3</sup>  
1 foot = 0.305 m  
1 inch = 25.4 mm  
1 psig = 6.894 kPa  
1 pound = 0.453 kg  
1,000 Btu per hour = 0.293 kW

Sterling Gas Fired Products are warranted by Sterling to be free from defects in material and workmanship for a period of one (1) year from the date of shipment from Sterling's Plant.

Sterling will repair or replace, at its option, any components which, upon inspection, it finds to be defective, provided that the unit has been operated within its listed capacity, installed in accordance with the furnished instructions, has not been misused or subject to negligence and has received reasonable and necessary maintenance. This warranty does not cover labor or other costs incurred in repairing, removing, installing, servicing or handling of parts or complete products.

This warranty does not cover loss due to corrosion by chemicals precipitated in the air such as halogenated hydrocarbons.

Sterling will in no event be liable for incidental or consequential damages of any kind.

The buyer must request written permission from Sterling to return defective components and then must send them with all transportation charges prepaid to the plant designated in the written permission.

This warranty is extended only to the original owner of the unit.

### REPLACEMENT PARTS

Replacement parts are available for all current and most obsolete Sterling Gas Fired Products.

**In the interest of product improvement Sterling reserves the right to make changes without notice.**



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